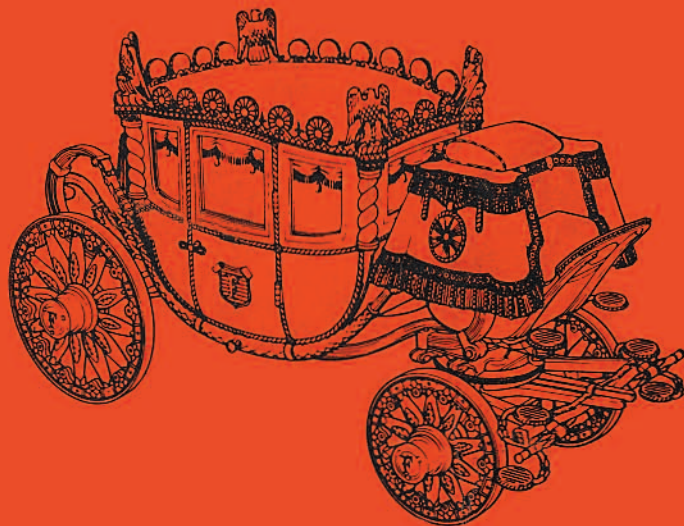


**1973**

# **Fisher Body**



**SERVICE MANUAL**

# 1973 FISHER BODY SERVICE MANUAL

**FOR ALL BODY STYLES  
(Except "H" Body)**

This publication contains the essential removal, installation, adjustment and maintenance procedures for servicing all U.S. and Canadian built 1973 Fisher Body Styles. All information, illustrations, and specifications contained in this publication are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

Arrangement of the material is shown by the table of contents on the right-hand side of this page. Black tabs on the first page of each section can be seen on the edge of the book below section title. A more detailed table of contents precedes each section, and an alphabetical index is included in the back of the manual.



QUICK REFERENCE INDEX. To use, move either the hand or selection tool directly over the section you desire to reference. Simply click once with the mouse button and the manual will automatically jump to that section.

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# SECTION 1

## GENERAL INFORMATION

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## MANUAL DESCRIPTION

### INTRODUCTION

This publication contains essential removal, installation, adjustment and maintenance procedures for servicing all 1973 Fisher Body Styles (except "H" bodies). This information is current as of time of publication approval.

### INDEX

The preceding page contains a "Table of Contents" which lists the section number and subject title of each main body area section. The first page in each main body area section has an index to the subjects included in that section. An alphabetic index covering entire manual is located in Section 12.

### PAGE AND FIGURE NUMBERS

All page numbers and figure numbers consist of two sets of digits separated by a dash. The digits preceding dash identify main body area section. Digits following dash represent consecutive page number or

figure number within the particular body area section.

### REFERENCE TABS

The first page of each section is marked with a ready-reference black tab corresponding with table of contents page.

### TEXT

Unless otherwise specified, each service procedure covers all body styles. Procedures covering specific styles are identified by style number, body series number, body type letter or similar designation. A description of these designations is covered in this section under "Model Identification".

### ILLUSTRATIONS

Where possible, illustrations are placed in close proximity to accompanying text and should be used as part of the text.

## MODEL IDENTIFICATION CHART

Division	Sales Name	Body Type	Series	Styles
Chevrolet	Chevelle Deluxe	A	1AC	29-35-37-80
	Chevelle Malibu	A	1AD	29-35-37-80
	Chevelle Laguna	A	1AE	29-35-37
	Chevelle Malibu Estate	A	1AG	35
	Chevelle Laguna Estate	A	1AH	35
	Monte Carlo	A	1AH	57
	Biscayne	B	1BJ	35-69 (Canada only)
	Bel Air	B	1BK	35-45-69 (57-Canada only)
	Impala	B	1BL	35-39-45-47-57-69
	Caprice Classic	B	1BN	35-39-45-47-67-69
	Camaro	F	1FQ	87
	Camaro Custom	F	1FS	87
	Nova	X	1XX	17-27-69
	Nova Custom	X	1XY	17-27-69
Pontiac	LeMans	A	2AD	29-35-37
	LeMans Sport	A	2AF	37
	LeMans Grand AM	A	2AH	29-37
	LeMans Luxury	A	2AG	29-37
	Grand Prix	A	2GK	57
	Catalina	B	2BL	35-39-45-57-69
	Bonneville	B	2BN	39-57-69
	Grand Ville	B	2BP	35-45-47-49-67
	Firebird	F	2FS	87
	Ventura	X	2XY	17-27-69
Oldsmobile	Cutlass	A	3AF	37
	Cutlass	A	3AG	29-37
	Cutlass Supreme	A	3AJ	29-35-57
	Delta 88	B	3BL	39-57-69
	Delta Royale 88	B	3BN	39-57-67-69
	Delta Custom Cruiser 88	B	3BQ	35-45
	Delta Custom Cruiser 88	B	3BR	35-45
	Ninety Eight	C	3CT	37-39
	Ninety Eight Luxury	C	3CV	37-39
	Ninety Eight Regency	C	3CX	39
	Toronado	E	3EY	57
	Toronado Deluxe	E	3EZ	57
	Omega	X	3XB	17-27-69

## MODEL IDENTIFICATION CHART (Cont'd.)

Division	Sales Name	Body Type	Series	Styles
Buick	Century	A	4AF	35
	Century	A	4AD	29-37
	Century Luxus	A	4AH	29-57
	Regal	A	4AJ	57
	Century Luxus	A	4AK	35
	Le Sabre	B	4BL	39-57-69
	Le Sabre Custom	B	4BN	39-57-69
	Estate Wagon	B	4BR	35-45
	Centurion	B	4BP	39-57-67
	Electra "225"	C	4CT	37-39
	Electra "225" Custom	C	4CV	37-39
	Riviera	E	4EY	87
Cadillac	Fleetwood Brougham Sedan	C	6CB	69
	Calais	C	6CC	47-49
	DeVille	C	6CD	47-49
	Fleetwood Seventy-Five	D	6DF	23-33
	Eldorado	E	6EL	47-67
GM of Canada Pontiac	Laurentian	B	7BK	35-45-57-69
	Parisienne	B	7BL	39-57-69
GM Coach	Sprint	A	5AC	80
	Sprint Custom	A	5AD	80

## MODEL IDENTIFICATION

### INTRODUCTION

Due to variety of body styles available, certain body styles have been grouped in this publication as an aid to identification. These group designations may be used individually or in various combinations. In addition to model identification chart, an explanation of principal categories follows:

### BODY SERIES NUMBER

The body series number identifies the following:

1. First Position - Division (ex. 1, Chevrolet; 2, Pontiac, etc.).
2. Second Position - Body Type (ex. 1A, Chevrolet "A" Body; 2A, Pontiac "A" Body, etc.).

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- 3. Third Position - Division Series (ex. 1AC, Chevrolet "A" Body Chevelle Deluxe; 2AD, Pontiac "A" Body LeMans, etc.).
- 4. The last two digits of the body series number indicate body style type as follows:

STYLE		DESCRIPTION
17	2-Door -	Notch Back Coupe
23	4-Door -	Limousine with Auxiliary Seat
27	2-Door -	Notch Back - Pillar Coupe
29	4-Door -	Notch Back - Hardtop Sedan
33	4-Door -	Limousine with Auxiliary Seat and Center Partition Window
35	4-Door -	Station Wagon - 2 Seat
37	2-Door -	Notch Back - Hardtop Coupe
39	4-Door -	Notch Back - Hardtop (4 Window) Sedan
45	4-Door -	Station Wagon - 3 Seat
47	2-Door -	Notch Back - Hardtop Coupe
49	4-Door -	Notch Back - Hardtop (4 Window) Sedan
57	2-Door -	Notch Back - Hardtop Coupe
67	2-Door -	Convertible Coupe
69	4-Door -	Notch Back - Pillar (4 Window)Sedan
77	2-Door -	Plain Back Pillar Coupe
80	2-Door -	Pick-Up Delivery
87	2-Door -	Plain Back - Hardtop Coupe

BODY STYLE NAME

Body style names are used for group classification as follows (style numbers suffix shown in brackets):

- 1. Closed Style
  - A. Two-door coupe (27,77)
  - B. Four-door sedan (69)
  - C. Limousine (23,33)
- 2. Hardtop
  - A. Sport coupe hardtop (37, 47, 57, 87)
  - B. Sedan hardtop (39, 49)
- 3. Station Wagon
  - A. Station wagon two seat (35)
  - B. Station wagon three seat (45)
- 4. Convertible Coupe (67)
- 5. Sedan Delivery (80)

BODY NUMBER PLATE

The body number plate identifies the model year, car division, series, style, body assembly plant, body number, trim combination, modular seat code, paint

code and date build code (Figs. 1-1 and 1-2). On all "A", "B", "C", "D" and "E" bodies, plate is located on right upper portion of horizontal surface of shroud. On all other bodies, plate is located on left upper portion of horizontal surface of shroud.

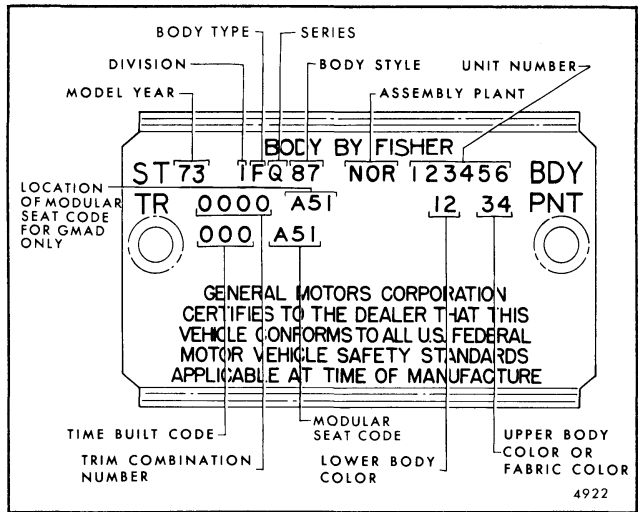


Fig. 1-1-Body Number Plate - U.S. Models

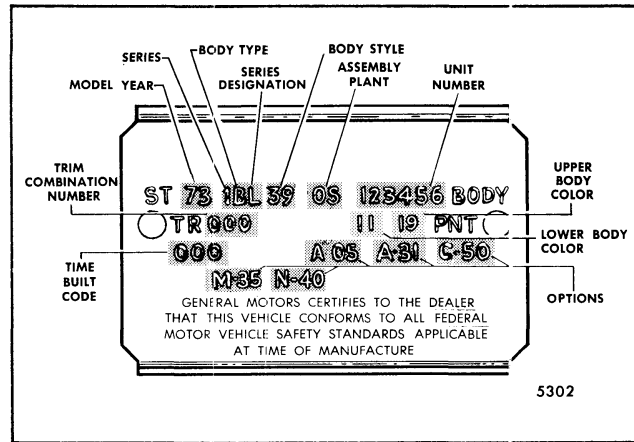


Fig. 1-2-Body Number Plate - Canadian Models

## VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (serial number) is located on left front horizontal surface of instru-

ment panel which is visible from outside the car.

## LOCK CYLINDER CODING

### FIVE BITTING LEVEL LOCK CYLINDER AND KEY

All models are equipped with new lock cylinders and keys. The keyway has been revised so that prior model keys will not enter current model lock cylinders.

Two non-interchangeable keys are used. One key, known as type "E" is identified by a square head, and the letter "E" stamped on the shank and is used in all ignition and front door lock cylinders.

The second key, known as type "H" is identified by a round head, and the letter "H" stamped on the shank and is used in instrument panel compartment, console compartment, rear compartment and station wagon rear floor compartment lock cylinders. Spe-

cific key identification is obtained from the four character key code stamped on the knock-out portion of the key head. On type "E" keys codes range from 00J0 to 99J9 and 00K0 to 99K9. On type "H" keys, codes range from 00L0 to 99L9 and 00M0 to 99M9. This number identifies the lock combination and is used when ordering or making new keys.

After code number has been recorded by owner, plugs should be knocked out of key head. From these numbers, lock combination can be determined by use of a code list (available to owners of key cutting equipment from equipment suppliers). If key code numbers are not available from records or from "knock-out" plug, lock combination (tumbler numbers and position arrangement) can be determined by laying key on diagram in Figure 1-3.

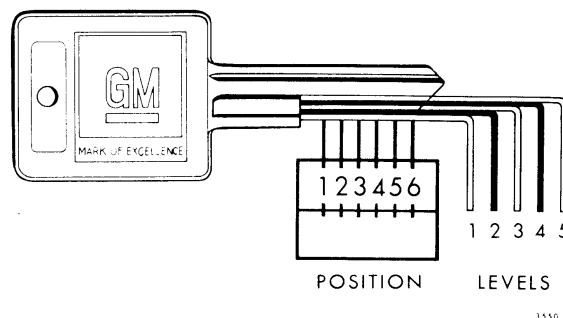


Fig. 1-3-Key Code Diagram

## CUTTING KEYS

After the special code has been determined, either from code list or Key Code Diagram (Fig. 1-3) cut blank key to the proper level for each of six tumbler positions, and check key in lock cylinder. The new key should agree with combination opposite code number in code list.

## REPLACEMENT LOCK CYLINDERS

New lock cylinders are available from Service Parts Warehouses with new lock cylinder locking bar staked in place. Tumblers are also available and must be assembled into cylinder according to procedure outlined below.

## ASSEMBLY AND CODING LOCK CYLINDERS

### All Lock Cylinders Except Glove And Console Compartments

Tumblers for all locks except glove and console compartments are shaped exactly alike, with the exception of notch position on one side. As the key is inserted in lock cylinder, tumblers are raised to correct height so that notches on each tumbler are at same level. When the notches on all six tumblers line up, locking bar is pushed into the notches by two small springs, allowing cylinder to turn in its bore. Five types of tumblers are used to make all various lock tumbler combinations and each is coded according to a number, 1 through 5, stamped on its side.

1. Determine lock cylinder tumbler numbers and tumbler arrangement by use of numerical key code lock cylinder code list. Code lists are made available to owners of key cutting equipment by equipment suppliers.

**NOTE:** To determine which tumblers should be installed in what position for a given key, when a code list is not available, proceed as follows:

- a. Lay key on Key Code Diagram (Fig. 1-3) with key outlined by diagram as accurately as possible.
- b. Starting at head of key blade, determine and record lowest level (tumbler number) that is visible in position No. 1 and subsequent position numbers 2 through 6. After tumbler numbers and arrangement have been determined, assemble as outlined in following steps.

2. Starting at open end (head) of cylinder, insert tumblers in their proper slots in the order called for by the code, as shown in Figure 1-4.

3. Pull out side bar with fingers so that tumblers will drop completely into place (Fig. 1-4). Insert one tumbler spring in space provided above each tumbler.

**CAUTION:** If the springs become tangled, do not pull them apart - unscrew them.

4. Insert spring retainer so that two end prongs slide into the slots at either end of cylinder. Press retainer down (see Fig. 1-5).

5. To determine if tumblers have been properly installed, insert key into lock cylinder. If tumblers are installed properly, side bar will drop down. If bar does not drop down, remove key, spring retainer, springs and tumblers and reassemble correctly.

**CAUTION:** If tumblers have not been assembled correctly, they can be removed from cylinder by holding cylinder with tumbler slots down, pulling side bar out with fingers and jarring cylinder to shake tumblers out. This procedure is necessary because once tumblers have been pressed down into the cylinder they are held in their slots by side bar.

6. If, after checking, it is found that lock cylinder is assembled properly, remove key and secure cylinder in a vise with spring retainer exposed.

**CAUTION:** Use leather or wood at each vise jaw to prevent damage to cylinder.

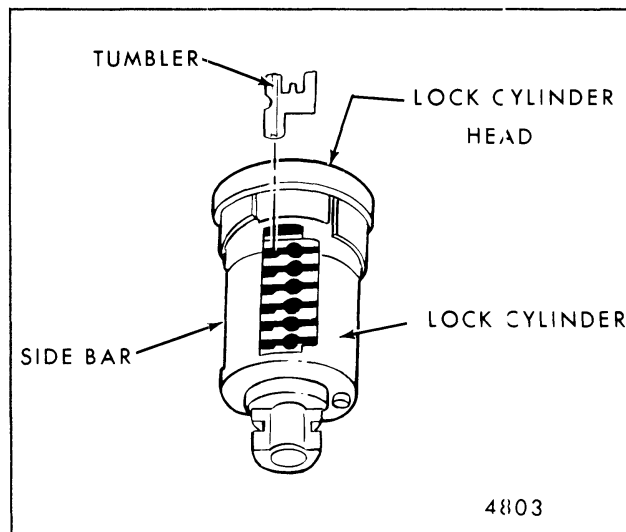


Fig. 1-4-Installing Tumblers



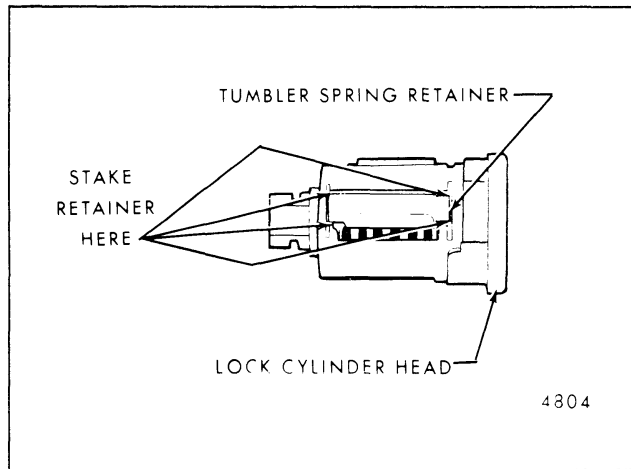


Fig. 1-5-Installing Spring Retainer

7. Using suitable staking tool, stake spring retainer securely in place by staking cylinder metal over retainer at each end. Refer to Figure 1-5.

## ASSEMBLING AND CODING GLOVE COMPARTMENT LOCK CYLINDERS

All 1973 styles utilize a lock cylinder with snap-in tumblers for all glove compartment locks. Glove compartment lock cylinders have five positions and four tumblers. The number 1 position (closest to cylinder head) is a brass retainer "tumbler". The 2 thru 5 positions are standard tumbler positions.

- The snap-in type cylinder is used only for the glove compartment. Therefore, lock cylinder components, including cylinders, tumblers, retainer "tumblers" and tumbler springs are not interchangeable for any other lock cylinder application. All individual components for servicing the snap-in cylinder are available separately from the Service Parts System.

1. Determine lock cylinder tumbler numbers and tumbler arrangement by use of numerical key code lock cylinder code list. Code lists are made available to owners of key cutting equipment by equipment suppliers.

**NOTE:** To determine which tumblers should be installed in what position for a given key, when a code list is not available, proceed as follows:

- a. Lay key on Key Code Diagram (Fig. 1-3) with key outlined by diagram as accurately as possible.
- b. Starting at head of key blade, determine and record lowest level (tumbler number) that is

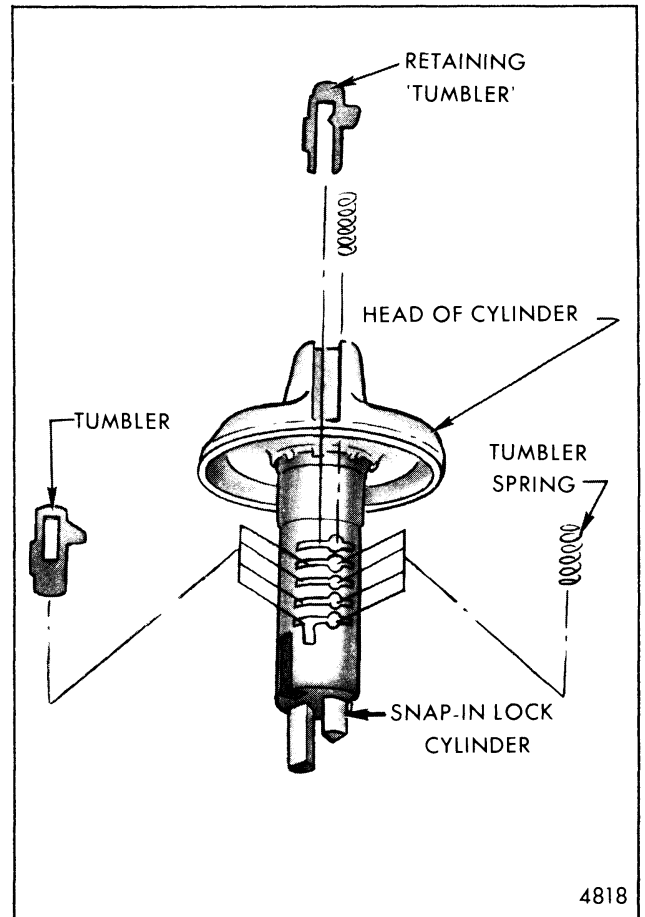


Fig. 1-6-Installing Tumblers

visible in position No. 1 and subsequent position numbers 2 thru 5. After tumbler numbers and arrangement have been determined, assemble as outlined in following steps.

2. Starting at open end (head) of cylinder, insert tumbler spring and retainer "tumbler" in first position, then proceed to insert tumbler springs and tumblers in their proper slots in the order previously determined by code, as shown in Figure 1-6.
3. Place cylinder in vise, tumblers up, using leather or wood at each vise jaw to prevent damage to cylinder.
4. Place small wooden block flat on exposed tumblers and tap tumblers down flush with cylinder, as shown in Figure 1-7.

## ASSEMBLING AND CODING CONSOLE COMPARTMENT LOCK CYLINDERS

Only one type of tumbler is used to make various

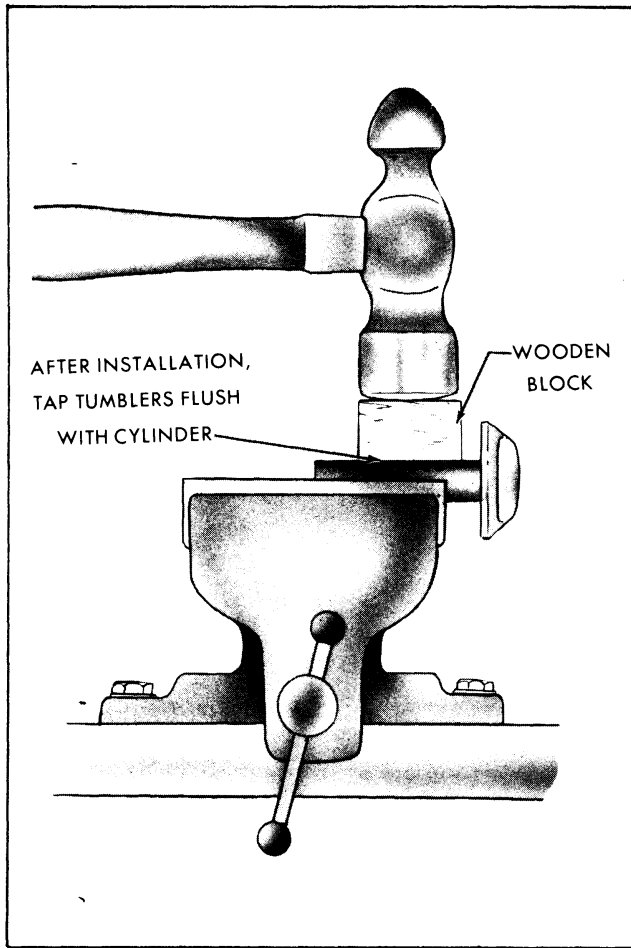


Fig. 1-7-Locking Tumblers In Place

lock tumbler combinations for console compartment locks. Tumblers for these lock cylinders are pre-assembled in service replacement lock cylinder and require that correctly coded key be inserted in cylinder before and during cylinder coding.

As key is inserted in coded lock cylinder, each tumbler is depressed so that no part of any tumbler is

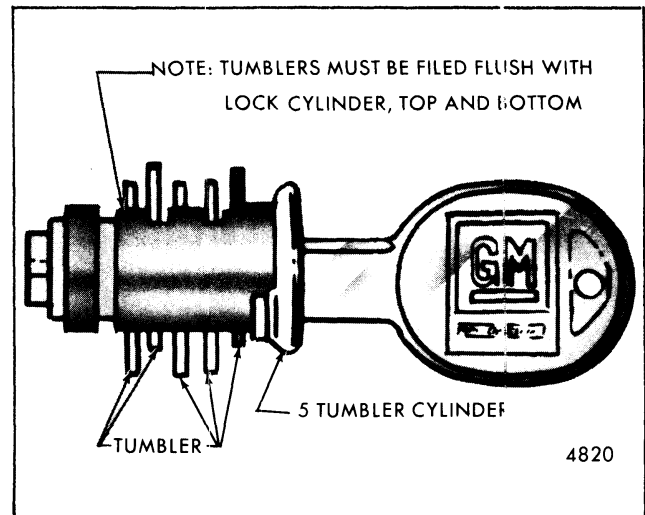


Fig. 1-8-Console Compartment Lock Cylinder

exposed above level of lock cylinder thereby allowing cylinder to turn in its bore.

**NOTE:** These lock assemblies are equipped with five tumblers rather than six as used in other locks. Tumblers are used in positions 2-3-4-5-6 only. The tumbler which corresponds to position 1 on key is not used.

1. Insert properly coded key in cylinder.
2. Place cylinder in vise, bottom side up, using leather or wood at each vise jaw to prevent damage to cylinder.
3. File tumblers down so that no part of any tumbler extends above lock cylinder.
4. Reverse lock cylinder position in vise and repeat step No. 3 for top of tumblers see Figure 1-8.

## GLASS POLISHING

### REMOVAL OF MINOR SCRATCHES AND ABRASIONS

#### Description

Minor glass scratches and abrasions can be effectively removed or substantially reduced by utilizing procedure and precautions presented in this section. The phases of glass polishing discussed in this section include equipment required, recommended procedure and precautions necessary.

There are two basic types of automotive glass: (1) laminated safety plate (all windshield and skylight glass) and (2) solid tempered safety plate (all side windows and back glass).

A major concern in glass polishing is preventing double vision from developing in areas that will distort driver's vision. For this reason, less polishing can be done on windshield in driver's line of vision than in other areas. Distortion is most likely to result when attempting to remove deep scratches.

Glass polishing is an operation that must be performed with reasonable care.

**CAUTION:** This operation must not be performed on inside surface of rear window glass equipped with rear window electric grid defogger (heating elements in glass).

The equipment and procedures recommended here were developed using cerium oxide compound (Glass-Nu or equivalent). Follow manufacturer's directions if other materials are used.

The following equipment is recommended for glass polishing:

1. A low speed (600-1300 RPM) rotary polisher (Skil Model No. 570 or equivalent).
2. A wool felt rotary-type polishing pad, approximately three inches in diameter and two inches thick.
3. Powdered cerium oxide (Glass-Nu or equivalent) mixed with water as the abrasive compound.
4. A wide mouth container to hold the polish.

### Glass Polishing Procedure

1. Mix at least three heaping tablespoons of cerium oxide (Glass-Nu or equivalent) with sufficient water to obtain a creamy consistency.

**NOTE:** If a larger proportion of cerium oxide (Glass-Nu or equivalent) is used, compound cakes on the felt pad faster. If a smaller proportion is used, polishing time required will increase.

2. Agitate mixture occasionally to maintain a creamy consistency. Powdered cerium oxide is insoluble in water and tends to separate.
3. Draw circle around scratches on opposite side of glass with marking crayon or equivalent. Draw other lines directly behind scratches to serve as guides in locating scratch during polishing (Fig. 1-9).
4. Use masking paper where needed to catch drippings or spattered polish.
5. Dip felt pad attached to polisher into mixture several times to insure that pad is well saturated.

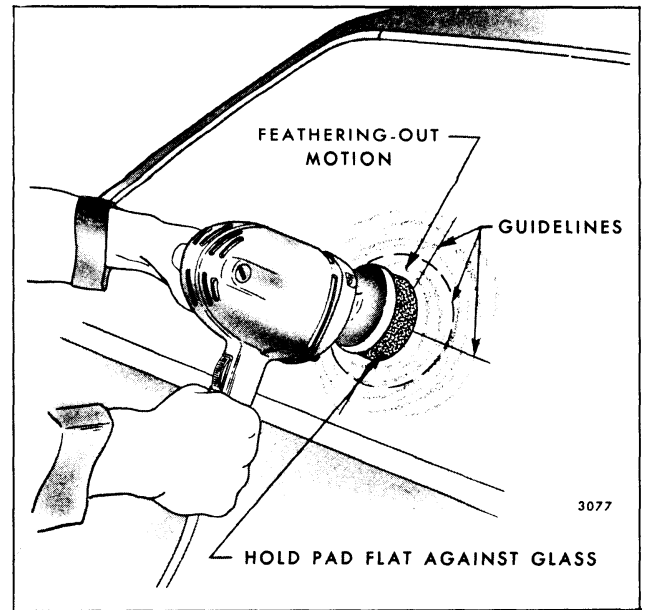


Fig. 1-9-Minor Glass Scratch Removal

**NOTE:** Never submerge or allow pad to stay in mixture as it may loosen bond between pad and metal plate.

6. Using moderate, but steady, pressure, hold pad flat against scratched area of glass, and with a feathering-out motion, polish affected area as shown in Figure 1-9.

**CAUTION:** Avoid excessive pressure. It does not speed-up operation and may cause overheating of glass.

7. Cover sufficient area around scratch with a feathering-out motion as shown in Figure 1-9, to eliminate any possibility of a "bulls-eye".

**CAUTION:** Never hold tool in one spot or operate tool on the glass any longer than 30 to 45 seconds at a time. If glass becomes hot to touch, let it air cool before proceeding further. Cooling with cold water may crack heated glass.

8. Dip pad into mixture about every fifteen seconds to insure that wheel and glass are always wet during polishing operation. A dry pad causes excessive heat to develop.
9. After removing scratch or abrasion, wipe body clean of any polish.
10. Clean polishing pad.

**NOTE:** Care should be taken during polishing and storage to keep pad free of foreign material such as dirt, metal filings, etc.

## STATIONARY GLASS

### DESCRIPTION

The windshield on all styles is bonded to body opening with one of two synthetic, self-curing, rubber adhesive materials - (1) Polysulfide Adhesive or (2) Urethane Adhesive.

The back window and quarter window are bonded to body opening with polysulfide adhesive, urethane adhesive or butyl tape (unless retained with rubber channel).

To replace a window installed with any of these materials requires either partial or complete replacement of adhesive material. Partial replacement of material is referred to as "short method". Complete material replacement is known as "extended method".

The "short method" can be used in those situations where original adhesive material remaining on window opening pinchweld flanges after glass removal can serve as a base for the new glass. This method would be applicable in cases of cracked windshields or removal of windows that are still intact. In these situations, the amount of adhesive that is left in window opening can be controlled during glass removal.

**NOTE:** It is necessary to identify the original adhesive material when using the "short method" in order that the proper replacement procedure is used. Refer to "Identification of Stationary Glass Adhesive Material" in this section.

The "extended method" is required when the original adhesive material remaining in window opening after glass removal cannot serve as a base for replacement glass. Examples of this latter situation would be in cases requiring metal work or paint refinishing in the opening, or where there is a considerable loss of adhesion between original adhesive material and body metal. In these cases, original material is removed and replaced with fresh material during window installation.

**NOTE:** To replace a window installed with butyl tape, the extended method must be used.

### IDENTIFICATION OF STATIONARY GLASS ADHESIVE MATERIAL

Butyl tape can be readily identified after molding or trim removal by absence of rubber dam (not used with butyl tape) and non-cure characteristic:

The other adhesive materials can be identified by the following method:

1. Cut a small piece of excess adhesive from glass or opening.
2. Stick small piece of sealant on end of knife or wire; then, hold sealant over match or lighter flame until it ignites.
  - A. Polysulfide - burns with a clear flame with very small amount of white smoke or no smoke - odor is very objectionable (heavy sulfur dioxide).
  - B. Urethane - burns with a dirty flame and emits a black smoke - very little odor.
  - C. Silicone (Cadillac "D" Style) - glows with little or no flame; emits white smoke and very little odor - burn residue is ash white.

### ADHESIVE SERVICE KITS

Adhesive Kit No. 4226000 (Silicone Adhesive) or equivalent contains some of the materials needed to remove and replace an adhesive installed glass. This kit can be obtained through Service Parts System as well as other materials that may be required.

The components of glass adhesive kit (Silicone) No. 4226000 or equivalent are as follows:

1. One tube of adhesive Silicone material.
2. One dispensing nozzle (cut for "short method" but can be notched-out for "extended method").
3. Steel music wire (.020 diameter).
4. Adhesive Primer

**NOTE:** Adhesive primer included in kit is intended for use on polysulfide adhesive only.

Additional material required:

1. Caulking gun - standard household cartridge type reworked as follows:
  - A. Widen end-slot to accept dispensing end of adhesive material tube.
  - B. Reduce diameter of plunger disc on rod so that disc can enter large end of adhesive material tube.

2. Two pieces of wood for wire handles.
3. Black weatherstrip adhesive.
4. Paint Finish Primer - available as service part No. 4226001 or equivalent.

**NOTE:** Paint Finish Primer No. 4226001 is intended for use with "extended method" when all adhesive material is removed from body opening or for "short method" when original adhesive material has been identified as urethane adhesive.

5. Two side support spacers.
6. Lower support spacers - for "short and extended method" installations.

**NOTE:** When glass is originally installed, a rubber sealing strip "dam" is used around edges of window to prevent excessive squeeze-out of adhesive material. Service installations do not utilize this part. By applying masking tape around inner perimeter of glass prior to window installation, excess squeeze-out material is picked-up and removed with tape.

## WINDOW REMOVAL

The window removal procedure is the same for both the "short" and "extended" installation methods with one exception. If the "short method" installation is to be used, more care must be used during removal to make certain that an even, uniform bead of adhesive material remains on window opening to serve as a base for replacement glass. Also, make certain that glass lower support spacers are not disturbed.

1. Place protective coverings around area where glass is being removed.
2. Remove all trim and hardware immediately adjacent to glass being removed. Depending on the window involved, this could involve window reveal moldings, garnish moldings or finishing lace, and windshield wiper arms.

**NOTE:** Reveal molding removal is covered in Exterior Molding Section 11.

3. On styles equipped with optional rear window electric grid defogger (heating elements in glass), disconnect wire harness connectors from glass. Refer to style usage and connector location chart in electric back window grid defogger portion of Electrical Section 10 for style usage, location of feed and ground wire connectors, and if

trim removal is required to service connectors. If glass is to be reinstalled, tape leads to inside surface of glass to protect them during handling.

**NOTE:** For quarter upper trim removal, refer to Section 6.

4. On styles equipped with radio antenna built into windshield glass, disconnect antenna lead at lower center of windshield. If glass is to be reinstalled, fold and tape lead wire back onto outer surface of windshield to protect it during glass removal and installation.
5. Secure one end of steel music wire to a piece of wood that can serve as a handle. Using long nose pliers, insert other end of wire through adhesive material at edge of glass; then, secure that end of wire to another wood handle (Fig. 1-10).
6. With aid of helper, carefully cut (pull wire) through adhesive material around entire perimeter of window. If "short method" will be used to install new glass, hold wire close to inside plane of glass to prevent cutting an excessive amount of adhesive material from window opening. Keep tension on wire throughout cutting operation to prevent wire from kinking and breaking (Fig. 1-10).

**NOTE:** Optional methods of glass removal which requires only one man are: (1) electric hot-knife (not recommended on some styles due to inaccessibility at lower corners of windshield glass), and (2) pulling cutting wire through upper and lower edges of glass simultaneously. For latter

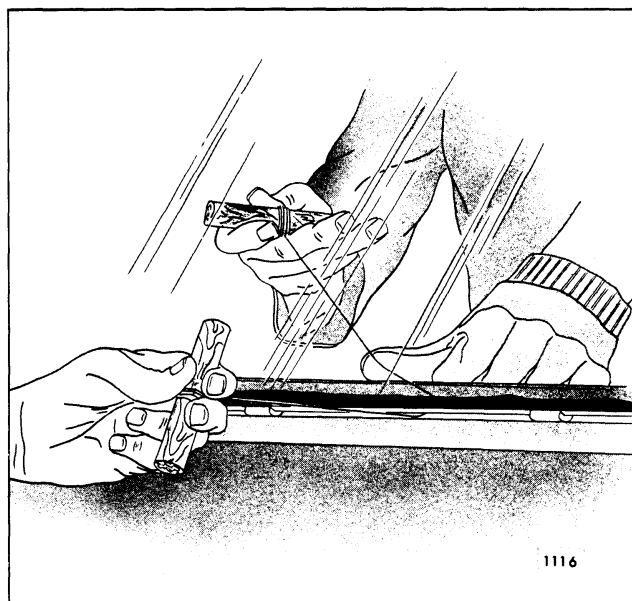


Fig. 1-10-Cutting Adhesive Material

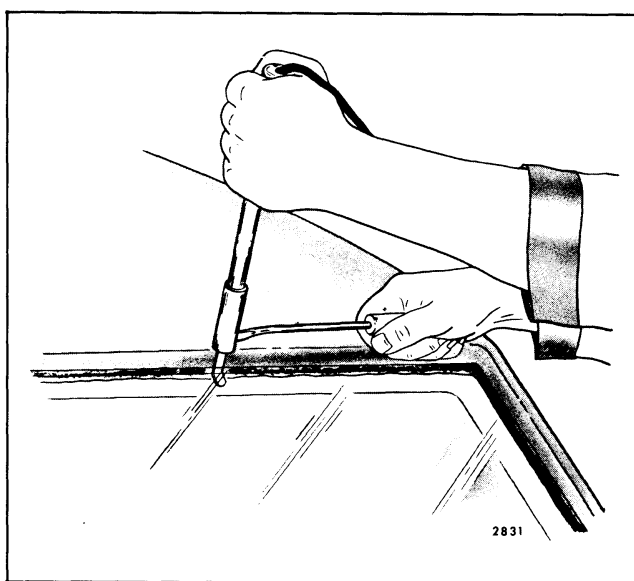


Fig. 1-11-Electric Hot-Knife Removal Method

optional method, insert one end of wire through adhesive material at inner upper edge of glass and other end of wire through adhesive material at inner lower edge. Attach handles to both wire ends outside of body (Figs. 1-11 and 1-12).

7. If original glass is to be reinstalled, place it on a protected bench or holding fixture; remove old material using a razor blade or sharp scraper. Any remaining traces of adhesive material can be removed with denatured alcohol or lacquer thinner dampened cloth.

**CAUTION:** When cleaning laminated glass, avoid contacting edge of plastic laminate material (on

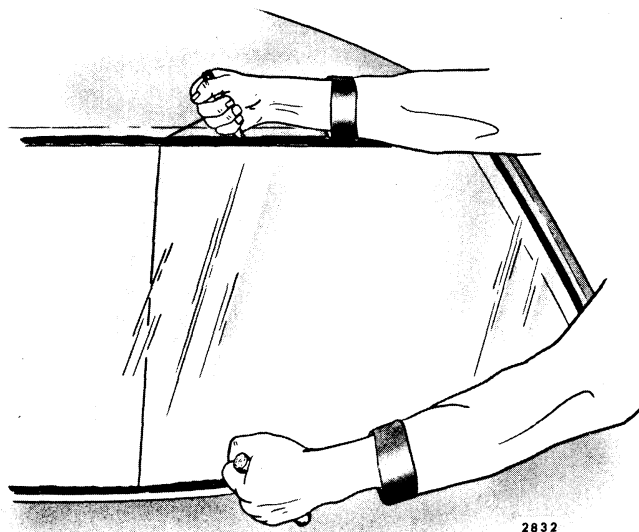


Fig. 1-12-One Man Wire Removal Method

edge of glass) with volatile cleaner. Contact may cause discoloration and deterioration of plastic laminate by "wicking" action. **DO NOT** use a petroleum base solvent such as kerosene or gasoline. The presence of oil will prevent adhesion of new material.

**NOTE:** Prior to installation of glass with either "short" or "extended" method **DETERMINE** if original adhesive material is **POLYSULFIDE**, **URETHANE**, **BUTYL TAPE** or **SILICONE** as previously described; then, proceed with the applicable installation procedure.

### "Short" Method Installation

1. Inspect reveal molding retaining clips. Replace or reshape clips which are bent away from body metal  $1/32$ " or more.
2. Locate lower support spacers as indicated in Fig. 1-15 ("A" location) and position glass in the window opening. If new glass is being installed, check relationship of glass to adhesive material on pinchweld flange. Gaps in excess of  $1/8$ " must be corrected by shimming or by applying more adhesive material than specified in Step 7.

Cement a rubber spacer between both right and left side of glass and body metal to assure that glass will remain centered in opening while adhesive material is curing.

3. When glass is in proper position in opening, apply piece of masking tape over each side edge of glass and adjacent body pillar. Slit tape vertically at edge of glass. During installation, tape on glass can be aligned with tape on body to guide window into desired position.
4. Using a small brush or lint-free cloth, apply the designated primer for each adhesive material as follows:
  - A. Polysulfide: Use primer supplied in Kit No. 4226000 or equivalent.
  - B. Urethane: Use Paint Finish Primer 4226001 or equivalent.
  - C. Silicone: No primer required

Apply designated primer over original adhesive material remaining on pinchweld flange. Perform the following steps while allowing primer to dry for 10 minutes.



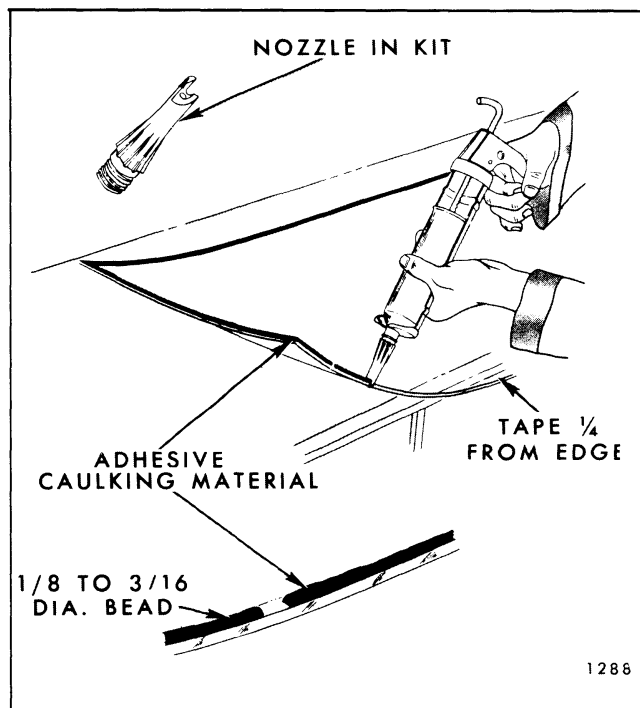


Fig. 1-13-Adhesive Material Application - Short Method

**CAUTION:** Use care so as not to spill or drip primer on painted or trimmed surfaces.

5. Apply 1" wide masking tape to inside of glass 1/4" inboard from edge of glass, across top and down each side, to facilitate clean-up after installation.
6. Wipe surface of glass to which adhesive material will be applied (around edge of inside surface) with a clean, water-dampened cloth. Dry glass with clean cloth.
7. Apply smooth continuous bead of adhesive material around entire inside edge of glass. Material should be 1/8" to 3/16" in diameter (Fig. 1-13).

**NOTE:** Due to fast curing characteristics of adhesive material, glass installation should be completed within 15 minutes from start of application of material to glass.

8. With aid of helper, lift glass into window opening. On back window installations it will be necessary to use suction cups to position glass in opening. Windshield glass can be positioned without aid of carrying devices. As shown in Figure 1-14, carry glass with one hand on inside of glass and one hand on outside. At window opening, put glass in horizontal position. While one man holds glass in this position, second man

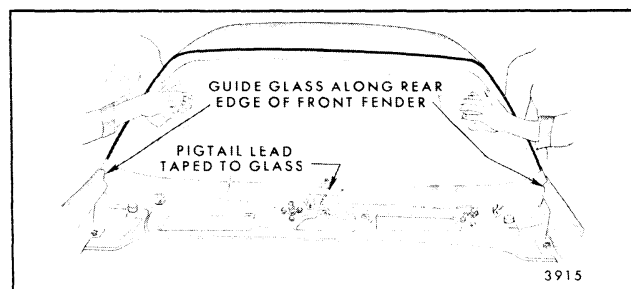


Fig. 1-14-Glass Installation

can reach one arm around body pillar and support glass while other man assumes same position. Quarter window glass can be installed in same manner.

9. Using tape guides applied in Step 3, carefully position glass in window opening. When installing windshield glass, guide outer lower surface of glass along rear edge of front fenders, making certain glass is properly centered and positioned on lower metal supports.
10. Press glass firmly to "wet-out" and "set" adhesive material. Use care to avoid excessive squeeze-out which would cause an appearance problem.
11. Watertest car immediately using cold water spray. Do not direct hard stream of water at fresh adhesive material. If any leaks are encountered, paddle-in extra adhesive material at leak point using a stick or flat-blade tool.
12. Install window reveal moldings. Remove clean-up masking tape from inner surface of glass and install remaining parts.

### INSTALLATION-"Extended" Method

If original adhesive material is butyl tape or material remaining in window opening after window removal is damaged, or must be removed to permit refinishing of window opening, or has insufficient adhesion to body metal to serve as a base for replacement glass, it will be necessary to use "extended" installation method.

1. Remove screw-retained lower glass supports (windshield only).
2. Using sharp scraper or chisel, remove MAJOR portion of old adhesive material from window opening flanges around entire opening. It is not necessary that all traces of material be removed, but there should not be any mounds or loose pieces left.

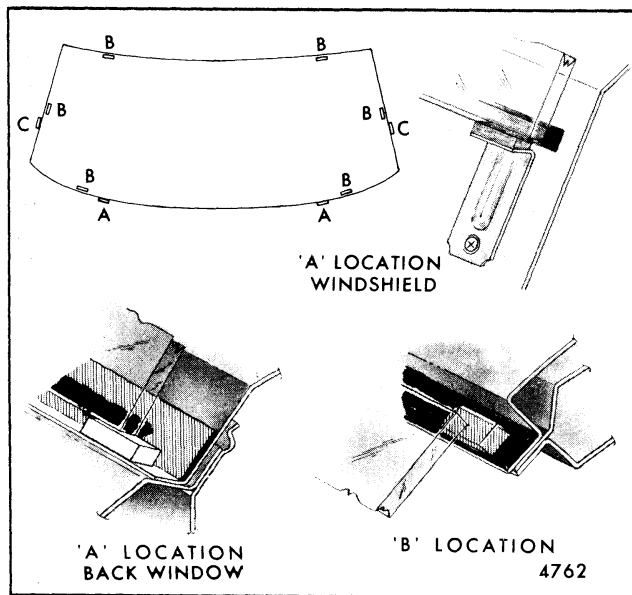


Fig. 1-15-Glass Spacer Installation

support spacers. While one man holds glass in this position, second man can reach one arm around body pillar and support glass while other man assumes the same position. Quarter window glass can be installed in same manner.

8. With glass positioned in opening, check relationship of glass to pinchweld flange around entire perimeter. Overlap of pinchweld flange should be equal with minimum overlap of  $3/16"$ . Overlap across top of windshield may be corrected by repositioning lower metal support spacers. Overlap across top of back window may be varied by shimming or shaving lower glass support spacers.

The following spacers are available as service parts.

- A. Part No. 4459429 or equivalent (20 x .63 x 1.0) stand off spacers for maintaining glass  $3/16"$  from body opening - see location "B", Figure 1-15.
- B. Part No. 7694478 or equivalent (.34 x .44 x .75) lower and side support spacers - see locations "A" and "C", Figure 1-15.
- C. Part No. 9848544 or equivalent (.52 x .44 x .75) lower and side support spacers - see locations "A" and "C", Figure 1-15.
- D. Part No. 9613680 or equivalent (.36 x .44 x 1.0) lower and side support spacers - see locations "A" and "C", Figure 1-15.

9. Check relationship of glass contour to body opening. Gap space between glass and pinchweld flange should be no less than  $1/8"$  nor more than  $1/4"$ . If difficulty is encountered staying between these limits, correction can be made by any one of the following methods:

- a. Reposition flat spacers.
- b. Apply more caulking material than is specified at excessive gap areas. Material can be applied to pinchweld flange or by allowing bead on glass to exceed  $3/8"$  height at gap areas.
- c. Change glasses - another glass may fit opening better.
- d. Rework pinchweld flange.

10. After final adjustments have been made and glass is in proper position, apply pieces of masking tape over edges of glass and body, depending on window being installed. Tape on glass can be

3. Inspect reveal molding retaining clips. If upper end of clip is bent away from body metal more than  $1/32"$ , replace or reform clip.

4. Using black weatherstrip adhesive or adhesive material, cement flat rubber spacers No. 4459429 or equivalent to window opening pinchweld flanges. As shown in Figure 1-15, location "B", spacers should be positioned to provide equal support around entire perimeter of glass.

**CAUTION:** If weatherstrip adhesive is used, apply sufficient material to obtain watertight seal beneath spacer, however, DO NOT allow excessive squeeze-out. Weatherstrip adhesive is not compatible with replacement adhesive material and waterleaks may develop at locations where these two materials are used together to form seal.

5. Figure 1-15, location "A", illustrates rectangular spacers positioned in typical back window installation. Re-install metal supports at lower edge of windshield glass (in lieu of two lower "A" spacers indicated in back window installation).
6. With aid of helper, lift glass into window opening. On back window installations it will be necessary to use suction cups to position glass in opening. The windshield glass can be positioned without aid of carrying devices as described in Step 7 (Fig. 1-14).
7. With one hand on each side of glass, put window in vertical position and support it on lower glass

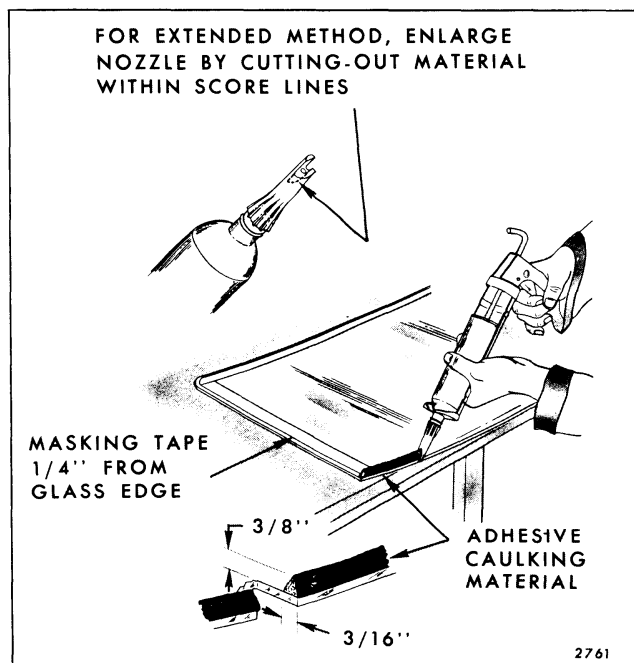


Fig. 1-16-Adhesive Material Application - Extended Method

aligned with tape on body to guide glass into opening during installation.

11. Remove glass from opening and apply one-inch masking tape around inner surface of glass 1/4" inboard from outer edge. On windshield installations, apply tape to top and sides only. Do not use tape across bottom. Removal of tape after glass installation will aid in clean-up and give a smooth, even edge to adhesive material (Fig. 1-16).
12. Using clean lint-free cloth liberally dampened with Adhesive Primer or equivalent (supplied in Kit No. 4226000 or equivalent), briskly rub primer over original adhesive material remaining on pinchweld flange. Perform the following steps while allowing primer to dry for 5 to 10 minutes.

**NOTE:** If pinchweld flange has been repainted, prime pinchweld flange with Paint Finish Primer No. 4226001 or equivalent. Paint Finish Primer is available as a service part.

**CAUTION:** Use extreme care to avoid spilling either primer solution on trim or painted surfaces. Wipe any spills immediately as primers will etch trim or painted surfaces on prolonged contact.

13. Nozzle furnished in kit is designed for "short" method. For "extended" method, enlarge nozzle opening by removing material within score lines as indicated in Figure 1-16. Do not notch nozzle beyond score lines.

14. Wipe surface of glass to which bead of adhesive material will be applied (between masking tape and edge of glass) with clean water-dampened rag. Dry glass with clean cloth.
15. With caulking gun and nozzle positioned as illustrated in Figure 1-16, carefully apply smooth continuous bead of adhesive material 3/8" high by 3/16" wide at base completely around inside edge of glass.

**NOTE:** Adhesive material begins to cure after fifteen minute exposure to air; therefore, install glass in opening as quickly as possible.

16. Using tape guides applied in Step 10, carefully position glass in window opening. Guide lower outer surface of glass along rear edge of front fenders to avoid smearing fresh adhesive material on instrument panel (Fig. 1-14). Make certain glass is properly aligned to tape guides on pillars, and positioned on lower metal supports. Apply light hand pressure to "wet-out" adhesive material and obtain bond to body opening.
17. Watertest immediately using cold water spray.

Do not direct stream of water at fresh adhesive material. Allow water to spill over edges of glass. If waterleak is encountered, use flat-bladed tool to work-in additional adhesive material at leak point.

18. Install window reveal moldings. Then, carefully remove masking tape from around inner periphery of window. Pull tape toward center of glass to give a clean-cut edge to adhesive material, and to prevent excess squeeze-out material on tape from creating an additional clean-up problem.
19. Install all other previously removed parts and clean-up.

## BACK WINDOW AND REAR QUARTER WINDOW INSTALLED WITH BUTYL RUBBER TAPE ADHESIVE

Back window and quarter windows installed with butyl rubber adhesive should not be replaced with ordinary butyl adhesive currently available for service replacement. Butyl rubber adhesive can be identified in that it remains soft and does not cure to a rubber type material. Replacement of a back window or quarter window, installed with butyl rubber adhesive, requires removal of all butyl material from the body opening; then, installing new glass by the "extended" method installation.

## WATERLEAK CORRECTION

### Description

Adhesive glass installation waterleaks can be corrected without removing and reinstalling glass.

**NOTE:** First determine the type of adhesive securing the glass, see "Identification of Stationary Glass Adhesive" in the first part of this Section (Stationary Glass). After adhesive has been identified, proceed with the applicable repair procedure.

### Procedure

**NOTE:** The following procedure is applicable only with use of adhesive material furnished in Kit No. 4226000 or equivalent and designated primers or equivalent.

1. Remove reveal moldings in area of leak. In some cases, it may become necessary to remove garnish moldings or finishing lace to locate source of leak.

2. Mark location of leak(s).

**NOTE:** If leak is between adhesive material and body or between material and glass, carefully push outward on glass in area of leak to determine extent of leak. This operation should be performed while water is being applied to leak area. Mark extent of leak area.

3. From outside body clean any dirt or foreign material from leak area with water; then dry area with air hose.
4. Using a sharp knife, trim off uneven edge of adhesive material (see Operation "A", Fig. 1-17) at leak point and 3 to 4 inches on both sides of leak point or beyond limits of leak area.
5. Using a small brush apply designated primer over trimmed edge of adhesive material and over adjacent painted surface. The designated primer for each adhesive is as follows:

A. Polysulfide: Use primer supplied in Kit No. 4226000 or equivalent.

B. Urethane: Use Paint Finish Primer 4226001 or equivalent.

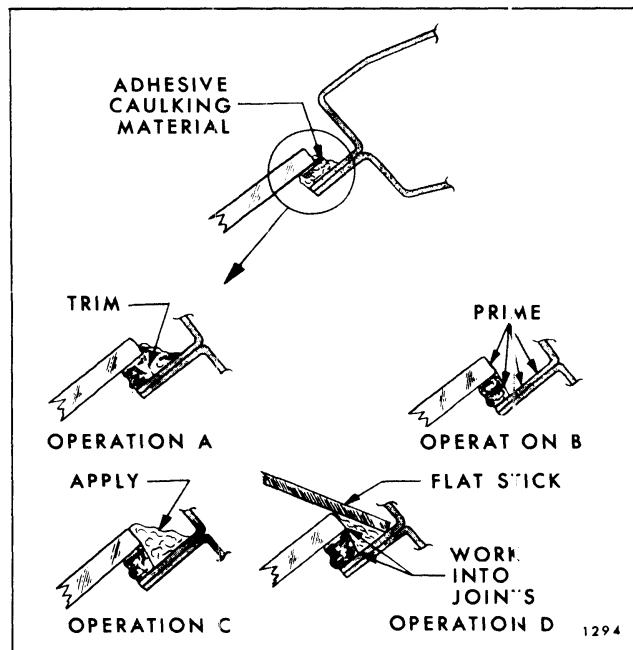


Fig. 1-17-Adhesive Glass Waterleak Correction

C. Butyl Tape: No primer required

D. Silicone: No primer required

6. Apply adhesive material, as shown in Operation "C" (Fig. 1-17), at leak point and 3 to 4 inches on both sides of leak point or beyond limits of leak area.
7. Immediately after performing Step 6, use flat stick or other suitable flat-bladed tool to work adhesive material well into leak point and into joint of original material and body to effect watertight seal along entire length of material application (see Operation "D", Fig. 1-17).
8. Spray watertest to assure that leak has been corrected. DO NOT run heavy stream of water directly on freshly applied adhesive material.

The quarter window on the Cadillac "E-47" style is retained by a rubber channel and integral metal retainer fastened by attaching screws. Quarter inner upper trim must be removed to gain access (refer to Section 6). For glass replacement use a light bodied sealer between rubber channel and glass and medium bodied sealer between rubber channel and outer panel to attain a water tight condition.

## BONDED REAR VIEW MIRROR SUPPORT

### DESCRIPTION

The rear view mirror support is bonded to windshield glass with a poly vinyl-butyral patch, through heat induction process, at assembly plant.

Service replacement windshield glass may have rear view mirror support bonded to windshield glass as an assembly. When glass replacement is required, simply transfer rear view mirror from one glass to another.

If rear view mirror support must be removed or installed on original windshield glass, or if rear view mirror support is not attached to a replacement windshield glass, installation may be performed with use of Loctite Minute-Bond Adhesive 312, Catalog No. 33-33, as available from all Loctite distributors, or an equivalent.

Depending upon operation to be performed some or all of the following materials will be required:

1. Loctite Minute-Bond Adhesive 312 two component pack, Catalog No. 33-33, or equivalent.
2. Replacement rear view mirror support, Service Part No. 9831062, (or equivalent) or original mirror support, prepared per Steps 4 and 5 of installation procedure.
3. Wax marking pencil, or crayon.
4. Heat gun (air blower type), 250 to 350 degree range (required only if rear view mirror support must be removed).
5. Domestic scouring cleanser, glass cleaning solution, or glass polishing compound.
6. Rubbing alcohol.
7. Clean paper towels.
8. Fine grit emery cloth or sand paper (No. 320 or No. 360).
9. Clean toothpick.
10. Asbestos cloth or paste.

### INSTALLATION

1. Determine rear view mirror support position on windshield. Support is located at center of glass

at one of following dimensions from base of glass to base of support (dimension "A", Fig. 1-18):

- A. 20 1/4" - "B"-39-47-57 and 67 styles (less 2BP47) and "E"- 47-57 and 67 styles.
- B. 20 3/4" - "B"-35-45-49-69 and 2BP47 styles and "C"-37 and 47 styles.
- C. 20 7/8" - "F" styles.
- D. 21 1/4" - "C"-39-49 and 69 styles and "D"- 23 and 33 styles.
- E. 19 3/4" - All "A" body styles.
- F. 15" - All "X" body styles.

2. When location is determined, mark location on outside of glass with wax pencil or crayon. Also make larger diameter circle around the mirror support circle, on the outside glass surface (see Fig. 1-18).
3. On inside glass surface, clean large circle with paper towel and domestic scouring cleanser, glass cleaning solution or polishing compound. Rub until area is completely clean and dry. When dry, thoroughly clean area with an alcohol saturated paper towel, to remove any traces of scouring powder or cleaning solution from this area.
4. With piece of fine grit (No. 320 or No. 360) emery cloth or sandpaper, completely sand bonding surface of new rear view mirror support, Part No. 9831062, (or equivalent) or factory installed support.

**CAUTION:** If original rear view mirror support is to be re-used, **ALL** traces of factory installed vinyl patch must be removed prior to re-installation.

5. Wipe sanded mirror support with clean paper towel saturated with alcohol, and allow to dry.
6. With spray can of accelerator material provided in Loctite Kit (or equivalent), lightly spray minute-bond accelerator to bonding surfaces of mirror support and windshield glass, and allow to dry completely.

**NOTE:** Due to rapid bond of adhesive the following steps must be performed without hesitation.

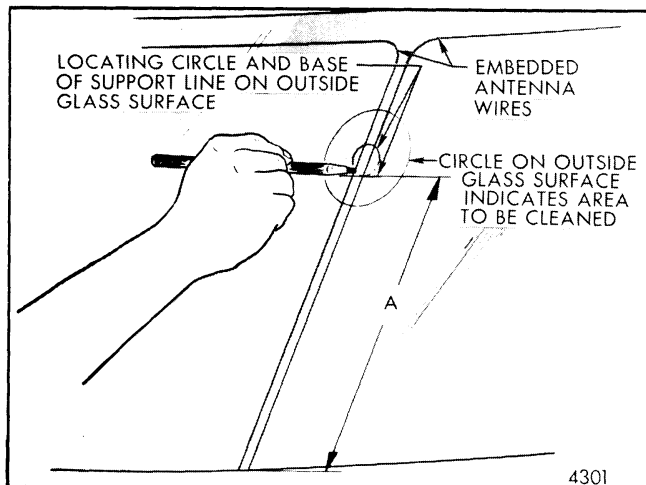


Fig. 1-18-Locating Bonded Rear View Mirror Support on Glass

7. When both bonding surfaces have dried, apply two drops of adhesive to mirror support, and with toothpick quickly distribute adhesive evenly over entire bonding surface of mirror support.
8. Properly position support to its pre-marked location, with rounded end pointed upward; press support against glass for 30 to 60 seconds, exerting steady pressure against glass. After five minutes, any excess adhesive may be removed with an alcohol moistened paper towel or glass cleaning solution.

## REMOVAL

1. Remove rear view mirror from support.
2. Protect windshield glass adjacent to mirror support by placing water dampened asbestos cloth

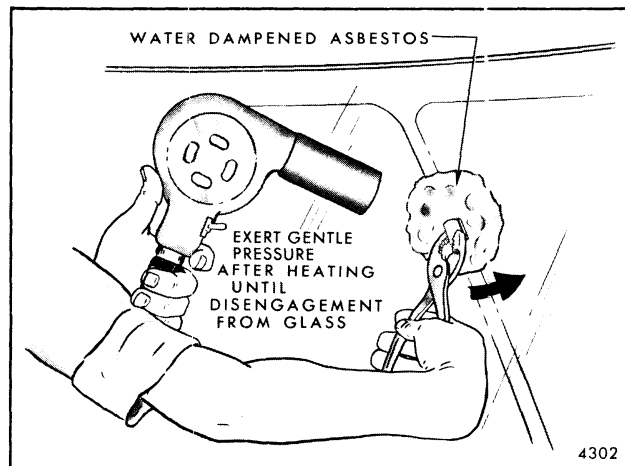


Fig. 1-19-Removal of Bonded Rear View Mirror Support From Glass

- or powdered asbestos paste on inside of glass, around support.
3. From inside of glass, heat mirror support with an air blower type heat gun to 250 to 350 degrees; then, carefully exert gentle sideward pressure on support with pliers until it disengages from glass, as shown in Figure 1-19.

**CAUTION:** Care must be exercised during this operation because insufficient heat will not free mirror support, and pressure on support may result in damage to glass. If excessive heat is applied, plastic laminate in windshield glass may become damaged.

4. After removal of rear view mirror support carefully scrape any remaining traces of adhesive or vinyl patch from glass surface. Both windshield glass and mirror support may now be prepared and installed per installation Steps 1 through 7.

## WOOD GRAIN TRANSFER (STATION WAGON STYLES)

### DESCRIPTION AND GENERAL INFORMATION

Wood grain transfers of all-vinyl construction are used on 1973 model station wagons. The transfers incorporate a pressure sensitive adhesive. The transfers are designed with an appealing wood grain pattern and a 50 degree or semi-gloss finish.

For service replacement, transfers are available through parts warehouses. When placing orders for transfers, carefully indicate "Division", "Model Year", "Body Style" and applicable car panel to determine correct part.

The following general information and procedures apply to replacement of transfers in service.

For quality results, the temperature of transfer, panel surface and work room should be between 65 degrees fahrenheit and 90 degrees fahrenheit. Transfers should not be replaced in temperatures below 65 degrees fahrenheit.

Prepare a supply of wetting solution, as called out in the procedure, by adding 1/4 ounce of detergent ("Joy", "Vel", or equivalent) to one gallon of clean water.



Use of wetting solution, as specified, insures a better bond between transfer and painted surface. Deviating from specifications, such as using too much detergent or using a soap solution, is detrimental to bond of transfer.

Transfer replacement involving collision damage, or damage to underlying acrylic paint finish requires that metal repair and/or refinish operations be carried to completion before transfer is installed.

The purpose of a proper squeegee sequence is to drive out all water and air. With proper tool, use progressive, overlapping strokes and work from center outwardly. At the same time, firm squeegee strokes provide required pressure for proper bonding of transfer adhesive to painted surfaces.

Scuff-sanding an acrylic finish before transfer installation with No. 360 or No. 400 sandpaper promotes better adhesion, and removes dirt nibs and high spots.

The following equipment and materials are necessary in making a quality transfer installation. Equivalent products can be used.

1. Liquid detergent: "Joy", "Vel" or equivalent.
2. Wax and Silicone Remover: "Prep-Sol", "Pre-Kleano", "Acryli-Clean" or equivalent.
3. 3-M Vinyl Trim Adhesive or equivalent; brush or spray-can.
4. Squeegee: 4" to 5" wide; plastic or hard rubber.
5. Water bucket and sponge.
6. Sandpaper, No. 360 or No. 400, Wet-or-Dry Type.
7. Infra-red heat bulb and extension cord.
8. Clean wiping rags or paper towels.
9. Sharp knife.
10. Scissors.
11. Fine pin or needle.

## Removal

1. Wash and clean repair surfaces and adjacent panels and openings as required.
2. Remove transfer finishing moldings, handles,

side marker lamps, and/or other transfer overlapping parts.

3. Remove affected transfer by starting at one edge and by peeling transfer as sheet from surface. Application of heat to affected transfer at point of removal aids removal operation.

**CAUTION:** Avoid using pointed or sharp instruments during transfer removal as they may damage paint finish.

## Installation

1. Scuff-sand acrylic painted surface with No. 360 or No. 400 sandpaper by dry sanding. Freshly painted surfaces must be allowed to dry thoroughly. Residual solvents in fresh paint can lead to subsequent blistering problems.
2. Clean acrylic painted surface with wax and silicone remover, such as: Prep-Sol, Pre-Kleano, Acryli-Clean, or equivalent. Wipe surface with clean cloth, and allow to dry. Use compressed air to blow away loose dirt from area of repair.
3. Apply vinyl trim adhesive to door hem flanges and to rear body lock pillar facing that will be covered by transfer.
4. Peel paper backing from transfer and lay transfer, face down, on clean table.
5. Using clean sponge, apply ample wetting solution to transfer adhesive and to repair panel surface.
6. Align upper edge and ends of transfer with panel surface and press down lightly across top.
7. Squeegee outboard from middle to edges of transfer with firm strokes to remove all air bubbles and wetting solution and to assure bonding of film to painted surface. On large transfers, the following sequence of operations will simplify transfer installation:
  - a. Squeegee a short, 4 to 6 inch, horizontal section of transfer at center of panel. Lift right or left side of transfer, position it straight and close to panel, and squeegee toward lifted edge. Avoid stretching transfer at lifted end. Squeegee progressively from middle with firm, overlapping strokes.
  - b. Lift upper area of transfer (up to bonded area of step "a" above) and, working upward from bonded section at middle, squeegee transfer into place.

- c. Lift lower area of transfer (up to bonded area) and, working downward from bonded section at middle, squeegee transfer into place.

**NOTE:** If wrinkle is trapped during squeegee operations, stop immediately. Carefully lift affected transfer section. Align affected section to surface and progressively squeegee it into place. Do not lift transfer if only a few tiny bubbles are trapped.

- d. Secure opposite half of transfer to surface as described in steps "a", "b" and "c", above.
8. Notch out corner or curved edges of transfer where necessary. Where necessary, trim off excess material at edges.
9. With heat lamp, heat inboard side of door hem flanges (or body lock pillar facing, etc.) and edges of transfer film (to approximately 90 degrees fahrenheit).

10. Fold ends of transfer over door hem flanges (or over corners at panel ends) and press to secure edges of transfer to panel surfaces. Avoid undue pulling or stretching at ends as tearing could result.
11. Apply heat to transfer at door handle holes, side marker lamps and other depressions. Press transfer uniformly into depressions to obtain formed bond.
12. With sharp knife, carefully cut out excess transfer at side marker lamps, door handle holes, and other openings in panel.
13. Inspect transfer installation from critical angle using adequate light reflection to detect any irregularities that may have developed during installation. Remove all air or moisture bubbles by piercing each at an acute angle with a fine pin or needle and by pressing the bubble down.
14. Install previously removed parts and clean up car as required.

## LUBRICATION

### GENERAL MAINTENANCE

The mechanical parts of the body that have contacting surfaces which operate in relative motion with other body parts are lubricated during assembly. To maintain ease of operating effort, it is recommended that these parts be lubricated on a periodic basis with lubricants as follows:

1. All hinges (door, compartment lid and tail gate) are to be lubricated every six (6) months with Auto-Lube "A", Part No. 1050110, or Spray-Lube "A", Part No. 1050520 or equivalent.

2. All locks (door, compartment lid and tail gate) are to be lubricated every six (6) months with Auto-Lube "A", Part No. 1050110, or Spray-Lube "A", Part No. 1050520 or equivalent.
3. Torque rods and hold-open supports (compartment lid and "B" style tail gate) are to be lubricated every six (6) months with Auto-Lube "A", Part No. 1050110, or Spray-Lube "A", Part No. 1050520 or equivalent.

The lubrication requirements for seat mechanism, door window hardware, convertible top mechanism, tail gate hardware, and windshield wipers are covered in the specific body area sections in this manual.

# WATERLEAK TEST PROCEDURES

## INTRODUCTION

G.M. vehicles are designed to operate under normal environmental conditions. The design criteria for sealing materials and components takes into consideration the sealing forces required to withstand the natural elements. These specifications do not, and cannot, take into consideration artificial conditions such as may be encountered in a high pressure car wash.

The watertest procedure has been correlated to the natural elements and will determine the ability of a vehicle to perform under normal operating conditions.

It is not necessary to subject an entire vehicle to this test. Depending upon the complaint, specific areas of the body may be spot-tested using only one or a combination of nozzles shown in Fig. 1-20, provided proper nozzle distance and angle to the vehicle is maintained.

1. Type of Nozzle: Full cone spray with 60 degree included angle.
2. Nozzle Height: Approximately 6" above top of roof
3. Volume of Flow: 3.7 gallons per minute

4. Pressure: 22 PSI measured at nozzle

5. Nozzle Angle: (See Fig. 1-20)

- A. Windshield and Front Body Pillar: Approximately 30 degrees down, 45 degrees towards rear and aimed at corner of windshield.
- B. Side: Approximately 30 degrees down, 45 degrees towards rear and aimed at center of rear door or rear quarter.
- C. Back Window and Rear Compartment Lid: Approximately 30 degrees down, 30 degrees towards front and aimed approximately 2 feet from corner of back window.

D. Test Times, as follows:

1. Windshield and Front Body Pillar - 4 minutes
2. Side - 3 minutes
3. Back Window and Rear Compartment Lid - 4 minutes
4. Underbody - (see below)

6. Underbody Testing: To watertest underbody, apply 2 minute test to suspected area at 22 PSI with nozzle at 45 degree angle to floor. When testing rear wheelhouse area, remove rear wheel for proper spray coverage and direct nozzle at wheelhouse to simulate wheel splash.

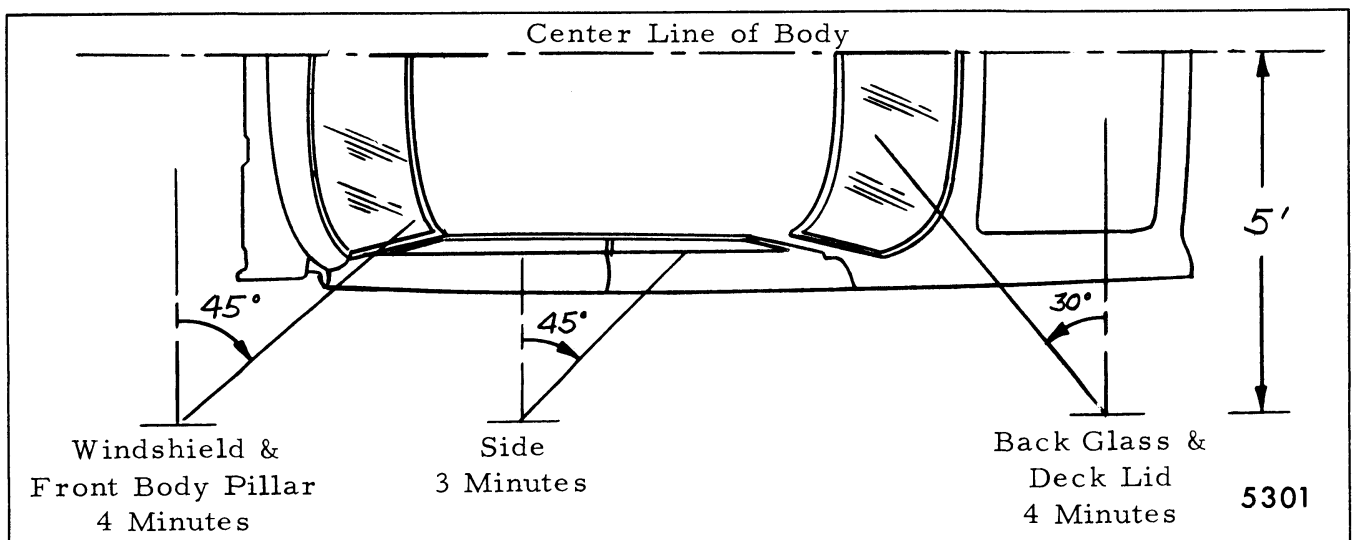


Fig. 1-20-Waterleak Test

## SPECIAL BODY TOOLS

Figs. 1-21 and 1-22 lists special body tools that are recommended as aids in servicing the various body

components. It is to be noted that these tools may be substituted with equivalents.

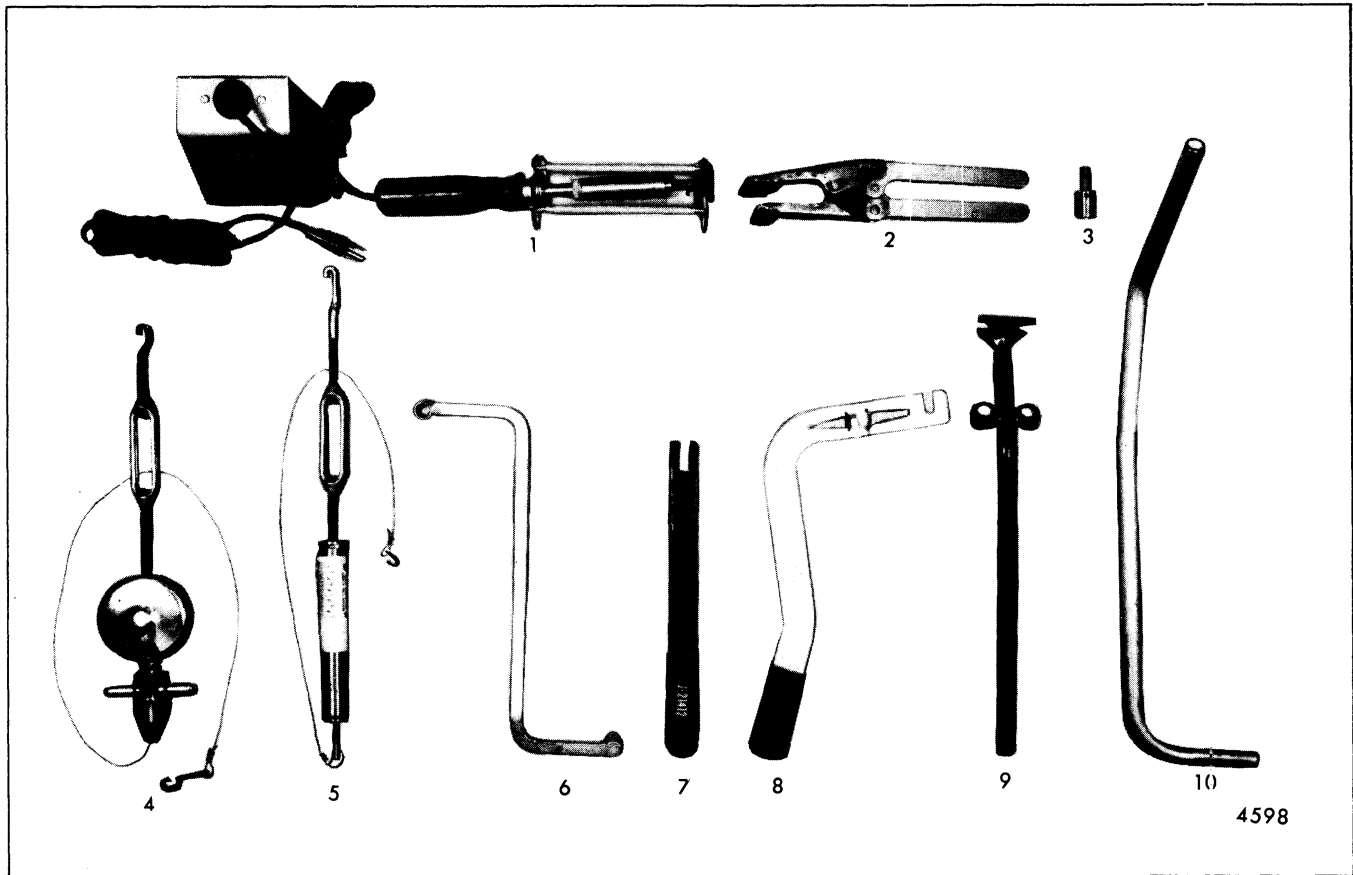


Fig. 1-21-Special Body Tools

- |  |  |   |   |
|--|--|---|---|
| 1. J-23091 - Fabric Roof Cover Repair Tool - Chevrolet, Pontiac, Oldsmobile and Buick Styles | 4. BT-7111 - Folding Top Tension Checking Gauge - "B and E" Styles | 7. J-21412 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - "A and X" Styles              | 9. J-23722 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - Cadillac "C and E" Styles |
| 2. J-23497 - Door Hinge Spring Compressing Tool - "X" Styles                                 | 5. J-23790 - Folding Top Tension Checking Gauge - "B and E" Styles | 8. BT-7102 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - "A" and Oldsmobile "E" Styles | 10. J-23719 - Retractable Tail Gate Torque Rod Adjusting Tool - "E" Styles                          |
| 3. J-23302, J-23457 and BT-7107 - Seat Belt Anchor Bolt Removing Tool                        | 6. J-22810 - Door Hinge Wrench - "A, B, C, E and F" Styles         |   |   |

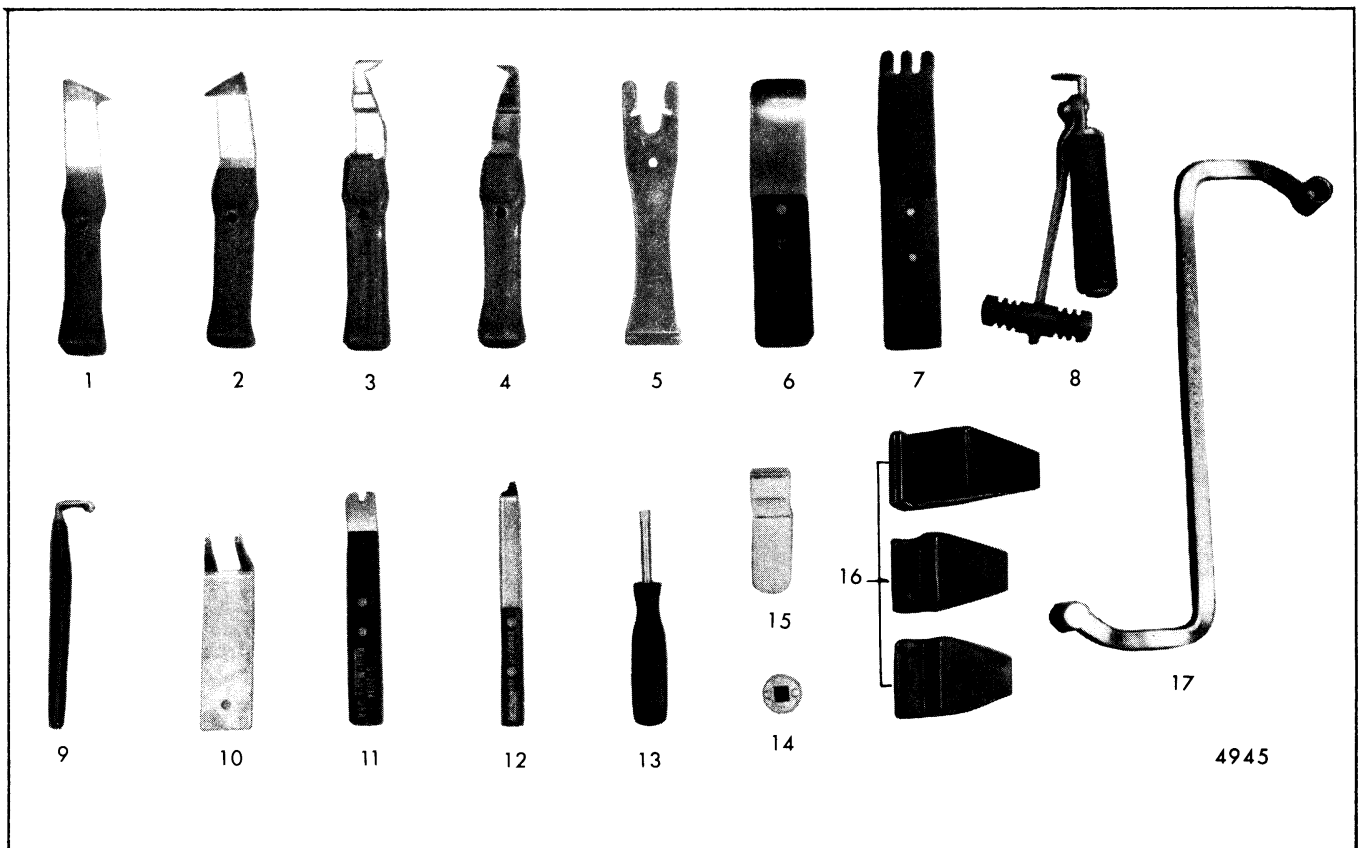


Fig. 1-22-Special Body Tools

- |   |  |   |  |
|---|--|---|--|
| 1. J-21549-10 - Reveal Molding Remover - "B, C, D, E and F" Styles (Left Hand Operation)  | 5. J-9886 - Door Handle Clip and Trim Pad Remover - All Styles         | 11. J-21104 - Weatherstrip Removing Tool - All Styles     | 16. Glass Alignment Gauge Block Set: J-23394-"F" Styles; J-23711-"B, C and E" Styles; J-24350-"A" Styles |
| 2. J-21549-11 - Reveal Molding Remover - "B, C, D, E and F" Styles (Right Hand Operation) | 6. J-2772 - Headlining Installer - All Styles                          | 12. J-21092 - Fabric Roof Cover Trim Knife - All Styles   | 17. J-24353 - Door Hinge Wrench - All Styles   |
| 3. J-21549-5 - Reveal Molding Remover (Left Hand Operations) - "A and X" Styles           | 7. J-24416 - Side Garnish Molding Remover - "A" Styles                 | 13. J-23554 - Door Trim Pad Applique Remover - All Styles |  |
| 4. J-21549-6 - Reveal Molding Remover (Right Hand Operations) - "A and X" Styles          | 8. J-24402 - Stationary Glass Remover - All Styles                     | 14. J-22055 - Window Nut Remover - All Styles             |  |
|   | 9. J-8966 - Windshield Wiper Arm Removing Tool - "A, F and X" Styles   | 15. J-23711-5 - Glass Alignment Gauge Block - 6CB69 Style |  |
|   | 10. J-22128 - Windshield Wiper Arm Removing Tool - "A, F and X" Styles |   |  |

SECTION 2

**WINDSHIELD WIPER SYSTEM**

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**WINDSHIELD WIPER SYSTEM**

**DESCRIPTION**

A two-speed wiper motor equipped with a windshield washer system is standard equipment on all models.

The non-depressed park system uses a rectangular shaped motor with wiper blades that are visible above the hood line when in the park position.

The depressed park system uses a round motor and wiper blades that park below the hood line.

Both systems use a tandem wipe pattern, however the depressed park system incorporates an articulated arm and blade on the left hand (drivers) side.

**CONTROL SWITCHES**

For service information on control switches, refer to Car Division Service Manuals.

**TWO SPEED-RECTANGULAR MOTOR**

**DESCRIPTION**

The system consists of a compound wound rectangular-shaped motor attached to a gear box containing

a parking switch in addition to the gear train. The gear train consists of a motor armature helical gear-shaft which drives an intermediate gear and pinion assembly. The pinion gear of the intermediate gear



## 2-2 WINDSHIELD WIPER SYSTEM

RECTANGULAR MOTOR APPLICATION CHART			
CAR DIVISION	SERIES	GEAR RATIO	CRANKARM LETTER
CHEVROLET and PONTIAC	F X	36:1 36:1	AA B
OLDSMOBILE	X	36:1	B 4821

Fig. 2-1-Rectangular Motor Application Chart

and pinion drives an output gear and shaft assembly (Fig. 2-12). A rectangular motor application chart is shown in Figure 2-1.

Turning the wiper switch to the "LO" speed position completes the circuits from the wiper terminals 1 and 3 to ground. Current then flows from the battery through wiper terminal No. 2 through the series field and divides; (1) part passes through the armature to ground through wiper terminal No. 1 to the wiper switch and (2) part passes through the shunt field to ground through wiper terminal No. 3 to the wiper switch (Fig. 2-2).

**NOTE:** The wiper switch must be securely grounded to body metal.

Moving the wiper switch to the "HI" speed position opens the shunt field circuit to ground at the switch. However, the shunt field is connected to a 20 ohm resistor which is connected across wiper terminals 1 and 3. The shunt field current then flows through terminal No. 3 through the resistor to terminal No. 1 to the switch, to ground (Fig. 2-3).

The parking circuit covers that portion of wiper operation when the wiper switch is turned "OFF" and the wiper blades have not reached the park position.

When the wiper blades are not in the normal park position, the parking switch contacts are still closed. The wiper will continue to operate until the wiper output gear is turned to a position where its cam opens the park switch. Referring to Figure 2-4 it can be seen that the wiper motor circuits are completed to ground through the parking switch.

**NOTE:** The wiper motor must be securely grounded to body metal.

The shunt field circuit is completed from terminal No. 3 through the switch to terminal No. 1 through the parking switch to ground. The series field and armature circuit is also completed from terminal No. 1 through the parking switch to ground.

**NOTE:** The shunt field is connected direct to ground by-passing the resistor. This results in "LO" speed operation during the parking operation.

When the output gear cam opens the park switch contacts, the wiper is "OFF".

### DIAGNOSIS-WIPER ON CAR

1. Inspect for the following items:
  - a. Wiring harness is securely connected to wiper and switch.
  - b. Wiper motor is securely grounded to body.
  - c. Wiper switch is securely mounted and grounded.
  - d. Check fuse.
2. If items in Step 1 check out, try operating wiper

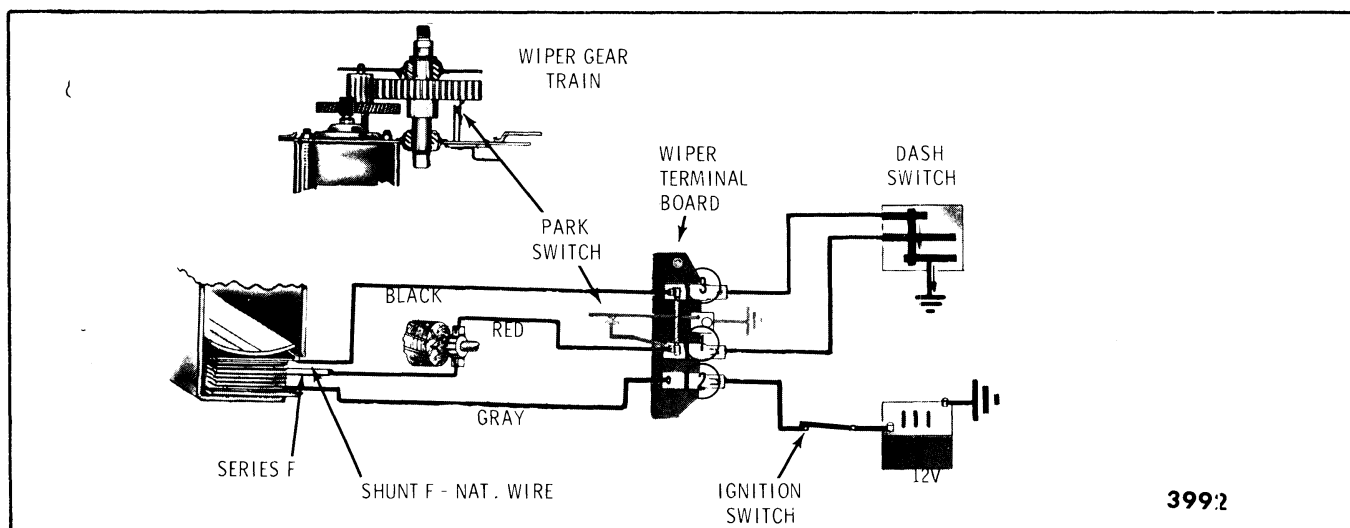


Fig. 2-2-"LO" Speed Circuit

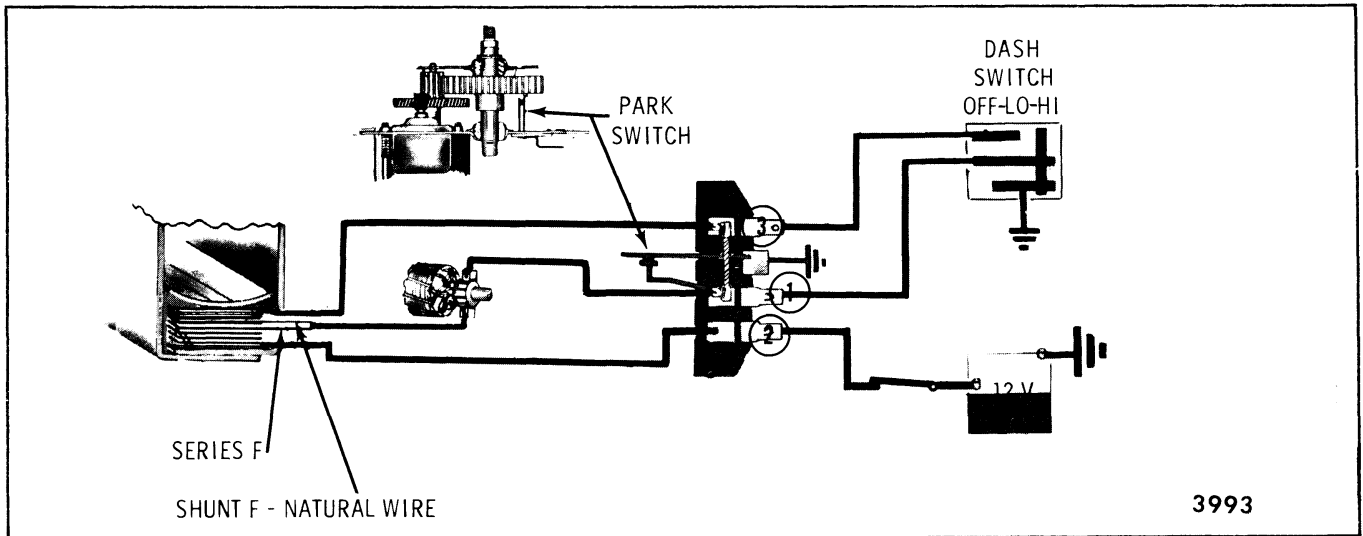


Fig. 2-3-'HI' Speed Circuit

in both "LO" and "HI" speeds, then turn wiper off (blades should return to park position). If wiper fails to operate correctly, proceed to Step 3.

3. Disconnect wiring harness from wiper and try operating wiper as shown in Figure 2-5.

- a. If wiper operates correctly independently of switch and car wiring, refer to the DIAGNOSIS CHART - WIPER ON CAR.

- b. If wiper still fails to operate correctly in Step 3, disconnect wiper linkage from motor crankarm and try operating wiper again. If wiper operates correctly independently of linkage, check linkage for cause of wiper malfunction.

- c. If wiper fails to operate correctly independently of linkage, remove wiper motor from car and refer to DIAGNOSIS CHART-WIPER OFF CAR.

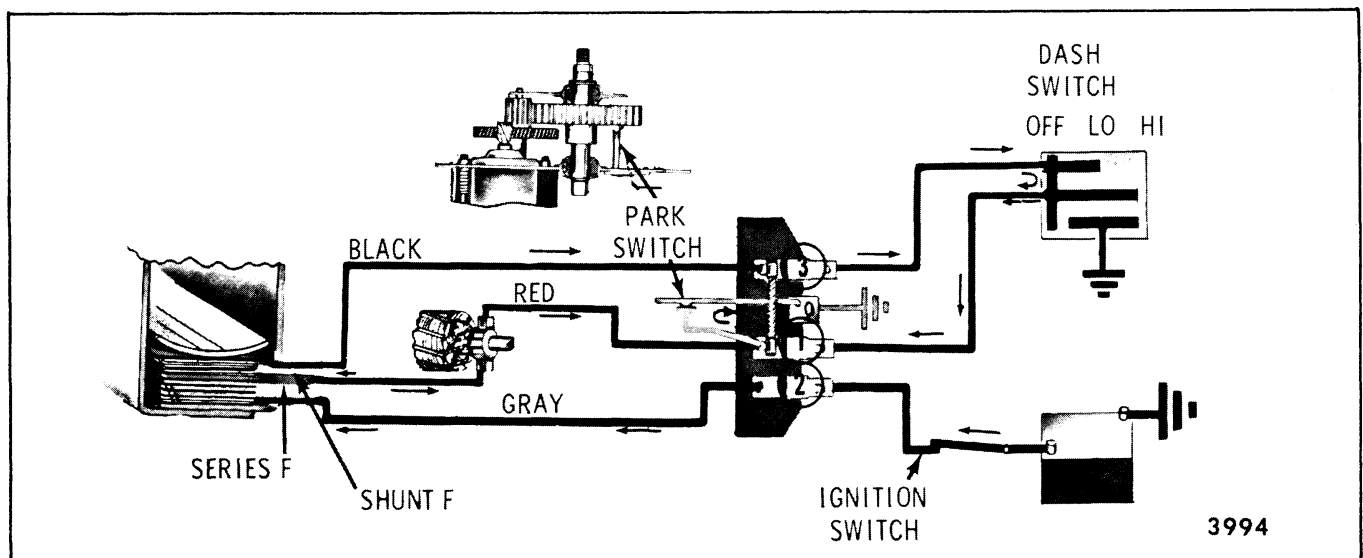


Fig. 2-4-Parking Circuit

## DIAGNOSIS CHART - WIPER ON CAR

**NOTE:** Ignition switch must be "on" for all electrical tests.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper Inoperative or intermittent	<p>A. Blown fuse</p> <p>B. Open circuit in feed wire (No. 2 terminal on wiper motor)</p> <p>C. Loose mounting of wiper switch</p> <p>D. Defective wiper switch</p> <p>E. Open circuit in wire to wiper switch (No. 1 terminal on wiper motor)</p>	<p>A. Locate short circuit and repair. Replace fuse.</p> <p>B. Locate broken wire and repair</p> <p>C. Tighten switch mounting</p> <p>D. Replace switch</p> <p>E. Locate broken wire and repair</p>
2. Wiper will not shut off: A. Wiper has both "Lo" and "Hi" speeds  B. Wiper has "Lo" speed only  C. Wiper has "Hi" speed only	<p>A. Grounded Wire (No. 1 terminal on wiper motor) to wiper switch</p> <p>A. Defective wiper switch</p> <p>B. Grounded wire (No. 3 terminal on wiper motor) to wiper switch</p> <p>A. Defective wiper switch</p> <p>B. Open circuit in wire (No. 3 terminal on wiper motor) to wiper switch</p>	<p>A. Locate short circuit and repair</p> <p>A. Replace wiper switch</p> <p>B. Locate and repair short circuit</p> <p>A. Replace wiper switch</p> <p>B. Locate and repair broken wire</p>
3. Wiper has "Hi" speed only	A. Open circuit in wire (No. 3 terminal on wiper motor) to wiper switch	A. Locate broken wire and repair
4. Wiper has "LO" speed only	<p>A. Grounded wire (No. 3 terminal on wiper motor) to wiper switch</p> <p>B. Defective wiper switch</p>	<p>A. Locate short circuit and repair</p> <p>B. Replace wiper switch</p>
5. Blades do not return to full park position	A. Loose wiper ground strap connection	A. Tighten strap connection

**DIAGNOSIS CHART - WIPER OFF CAR** (FIGURES 2-5, 2-10 and 2-11)

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper Inoperative or Intermittent	A. Broken or damaged gear train (only if inoperative) B. Poor solder connections at terminal board C. Loose splice joints at brush plate D. Brushes binding in brush holder E. Open circuit in armature	A. Replace gears as required B. Resolder wires at terminals C. Recrimp or solder splice joints D. Clean holder or replace brush, spring or brush plate assembly. E. Replace armature
2. Wiper will not shut-off: A. Wiper has normal "HI" and "LO" speed  B. Wiper has "LO" speed only  C. Wiper has "HI" speed only	A. Defective park switch B. Grounded red lead wire  A. Grounded shunt field coil (Fig. 2-11) B. Grounded black wire  A. Open circuit in shunt field coil (Fig. 2-11) B. Open circuit in black wire	A. Replace terminal board assembly B. Repair short circuit in red wire  A. Replace frame and field assembly B. Repair short circuit in black wire  A. Replace frame and field assembly B. Repair broken wire or poor solder connection
3. Wiper shuts off - but not in park position	A. Park switch defective or contacts dirty	A. Replace terminal board assembly or clean contacts
4. "HI" speed too fast	A. Resistor defective	A. Replace terminal board assembly

## WIPER MOTOR

### Removal and Installation

1. Raise hood and remove cowl screen or grille.
2. Disconnect wiring.
3. Reaching through cowl opening, loosen the transmission drive link attaching nuts to motor crankarm (Fig. 2-8).
4. Disconnect transmission drive link from motor crankarm.
5. Disconnect washer hoses.

## 2-6 WINDSHIELD WIPER SYSTEM

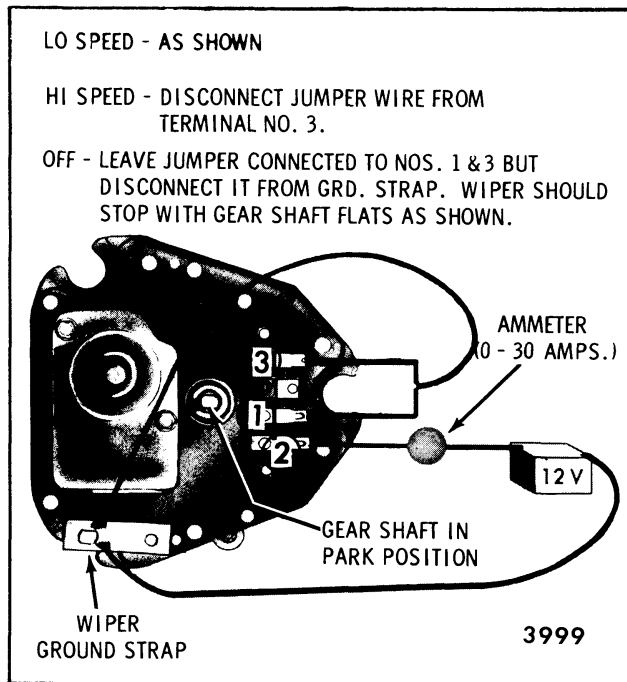


Fig. 2-5-Jumper Wire Connections

6. Remove three motor attaching screws.
7. Remove motor while guiding crankarm through hole.
8. To install, reverse the removal procedure.

### WIPER ARM

#### Removal and Installation

1. To remove the wiper arm and blade assemblies use tool J- 22128 or J-8966, or equivalent, to minimize the possibility of windshield or paint

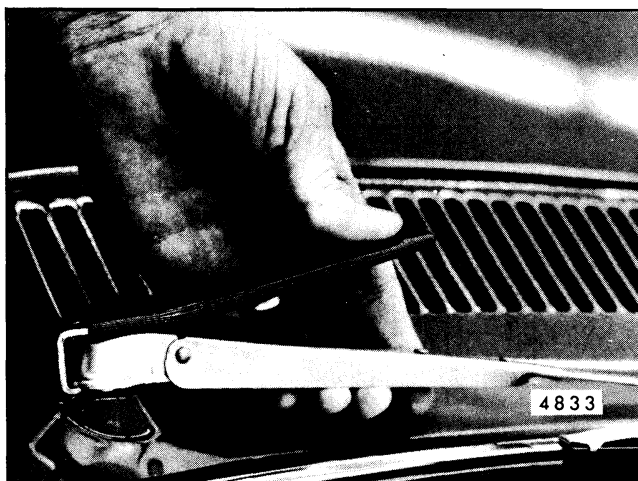


Fig. 2-6-Wiper Arm Removal Tool J-8966

finish damage during removal operation (Figs. 2-6 and 2-7).

2. To install the wiper arm and blade assemblies, with the wiper motor in the park position, install the wiper arm on the serrated transmission shaft in a position where the wiper blades will rest in the proper parked position. The same tool used for arm removal may be used to install the arm.

The parked position for "F" styles is indicated in Figure 2-8. On "X" styles, the tip of the left blade should rest 1.50" and the tip of the right blade 1.25" above top edge of windshield lower reveal molding. The outwipe dimension shown in Figure 2-8 is as follows:

- A. All "F" styles - .5" minimum to 2.25" maximum.
- B. "X" styles - 7/8".

**NOTE:** The correct park position and outwipe dimension is determined with the wipers operating at "LO" speed on a wet glass.

### WIPER ARM

#### Adjustment

The only adjustment of the wiper arm(s) is to remove the arm(s) from the serrated transmission shaft, rotate the arm(s) the required distance and direction and reinstall to transmission shaft. Wiper arm removal tool J-8966 or J-22128, or equivalent, may be used for arm removal and installation while making adjustments (Figs. 2-6 and 2-7).

**NOTE:** Wiper motor must be in park position.

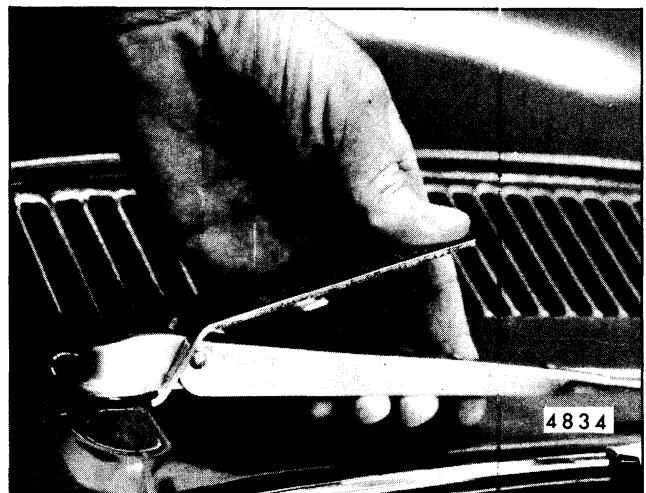
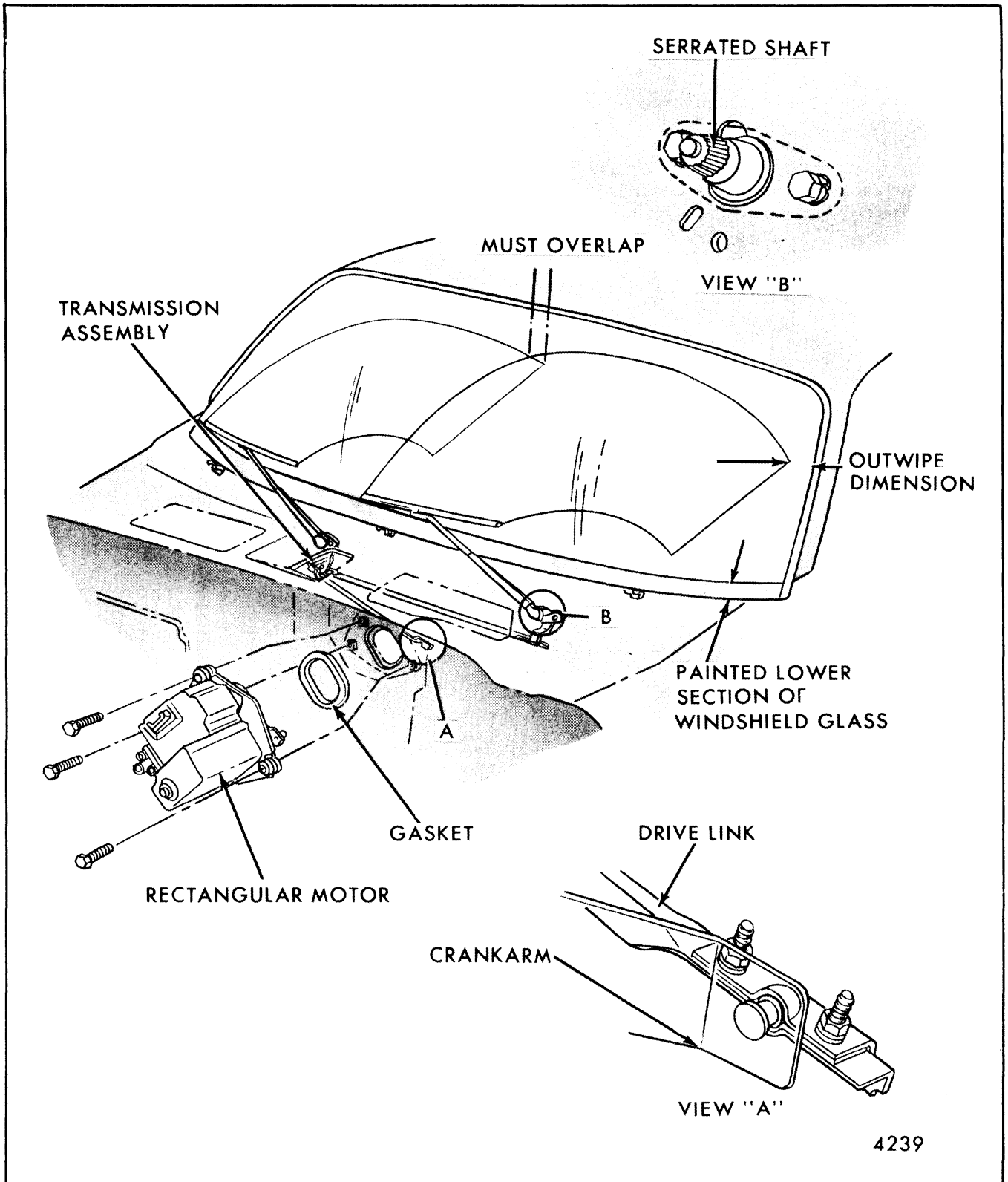


Fig. 2-7-Wiper Arm Removal Tool J-22128



**Fig. 2-8-Wiper Installation and Wipe Pattern - "F" Styles**

### WIPER BLADE

#### Removal and Installation

Two methods are used to retain wiper blades to wiper arms (Fig. 2-9).

One method uses a press type release tab. When the release tab is depressed the blade assembly can be separated from the arm.

The other method uses a coil spring retainer. A screwdriver must be inserted on top of the spring and the spring pushed downward (Fig. 2-9). The blade assembly can then be separated from the arm.

Two methods are also used to retain the blade element in the blade assembly (Fig. 2-9).

One method uses a press type button. When the button is depressed, the blade assembly can be slid off the blade element.

The other method uses a spring type retainer clip in the end of the blade element. When the retainer clip is squeezed together, the blade element can be slid out of the blade assembly.

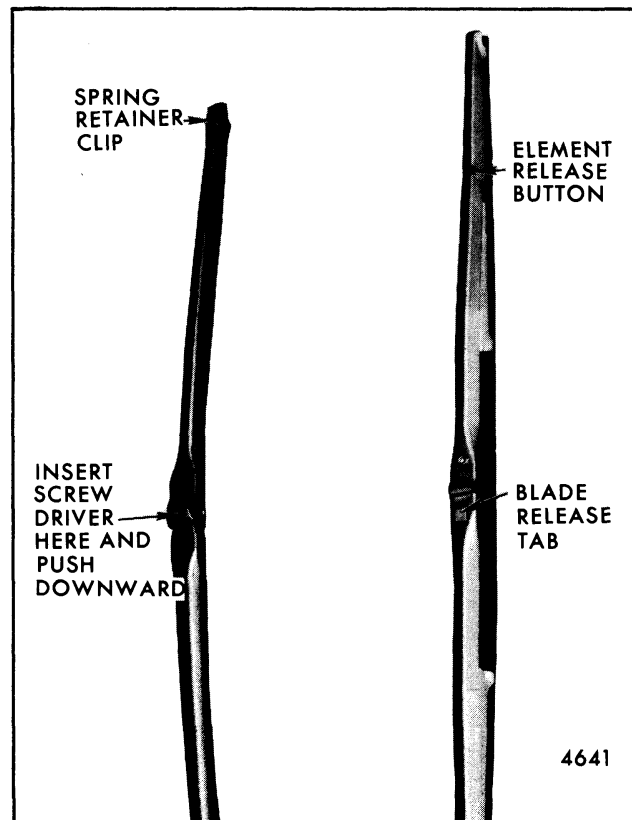


Fig. 2-9-Wiper Blade Assemblies

When installing a blade element into a blade assembly, be certain to engage the metal insert of the element into all retaining tabs of the blade assembly.

**NOTE:** When properly installed, the element release button, or the spring type element retaining clip should be at the end of the wiper blade assembly nearest the wiper transmission.

### WIPER TRANSMISSION

#### Removal and Installation

1. Remove wiper arms and blades as described under Wiper Arm Removal and Installation.
2. Raise hood and remove cowl vent screen or grille.
3. Disconnect wiring from wiper motor.
4. Loosen, do not remove, transmission drive link to motor crankarm attaching nuts (Fig. 2-8) and disconnect drive link from crankarm.
5. Remove right and left transmission to body attaching screws and guide transmission and linkage assembly out through cowl plenum chamber opening.
6. To install, place transmission and linkage assembly in plenum chamber and install transmission to body attaching screws loosely.

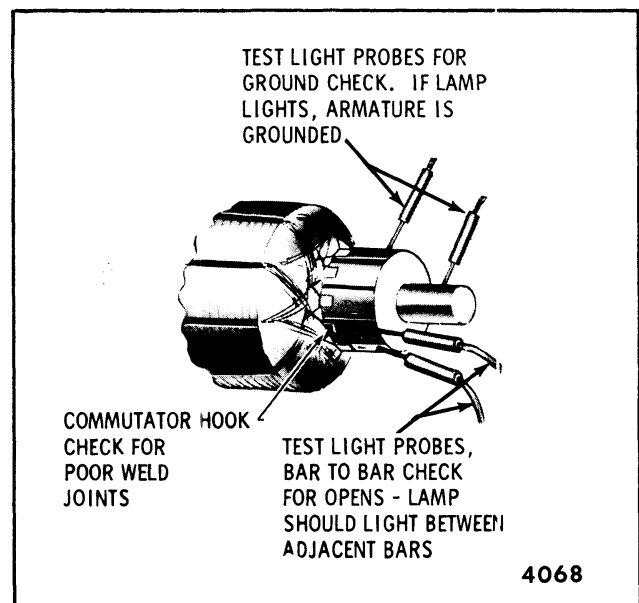


Fig. 2-10-Checking Armature

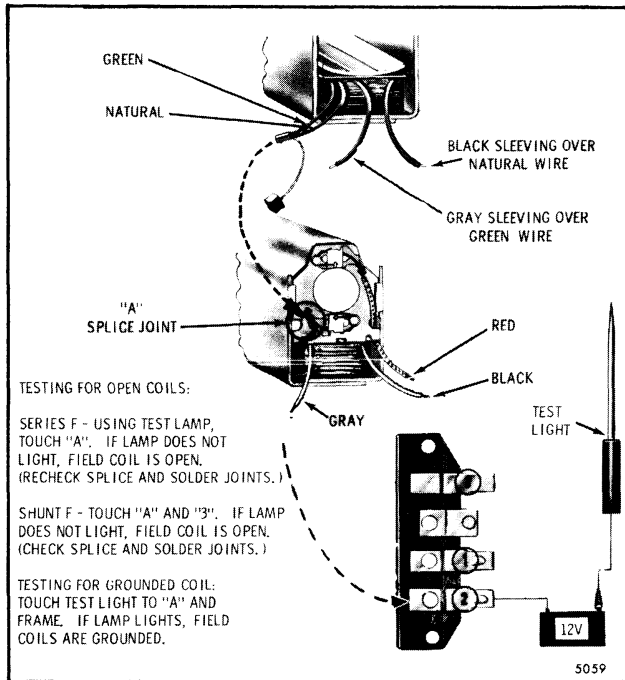


Fig. 2-11-Testing Field Coils

7. Connect transmission drive link to motor crankarm and tighten attaching nuts (25-35 inch pounds torque).

**NOTE:** Wiper motor must be in park position.

8. Align transmission assemblies and tighten transmission to body attaching screws.
9. Connect wiring to wiper motor.
10. Install cowl vent screen or grille and close hood.
11. Install wiper arms and blades and check wiper operation, wipe pattern and park position of blades.

## DISASSEMBLY-ASSEMBLY PROCEDURE

The disassembly-reassembly procedures for the wiper are broken down into two major areas: the motor section and gear box section.

### Gear Box Disassembly

1. Remove washer pump as follows:
  - a. Remove the two washer pump mounting screws and carefully lift the washer pump off the wiper motor.

- b. Remove the washer pump four lobe drive cam. The cam is a press fit on the wiper gear-shaft and it may be necessary to pry off with a screwdriver or similar tool.

- c. Remove the felt washer from the wiper gear-shaft.

2. Clamp crankarm in a vise and remove crankarm retaining nut.

**CAUTION:** Failure to clamp crankarm may result in stripping of wiper gears.

3. Remove crankarm, seal cap, Tru-Arc retaining ring and end play washers (Fig. 2-12).

**CAUTION:** Seal cap should be cleaned and re-packed with a waterproof type grease before reassembly.

4. Drill out staking that secures gear box cover (Fig. 2-13). Use a 9/32" drill.

**NOTE:** Mark ground strap location and save ground strap for reassembly.

5. Remove output gear and shaft assembly; then, slide intermediate gear and pinion assembly off shaft.

6. If required, remove terminal board and park switch assembly as follows:

- a. Note position of motor leads on terminals, then unsolder.
- b. Drill out rivets that secure terminal board and park switch ground strap to plate. Use a 7/64" drill.

**NOTE:** Screws, nuts and washers for attaching a replacement terminal board park switch assembly are included with a replacement assembly.

### Gear Box Reassembly

**CAUTION:** Lubricate all gear teeth with lubricant noted on specifications chart Figure 2-19.

1. If park switch and terminal board assembly were removed, reinstall replacement assembly using the attaching screws and nuts included in the service package. Resolder leads to terminals (Fig. 2-14).
2. Install wave washer and intermediate gear on intermediate gearshaft.



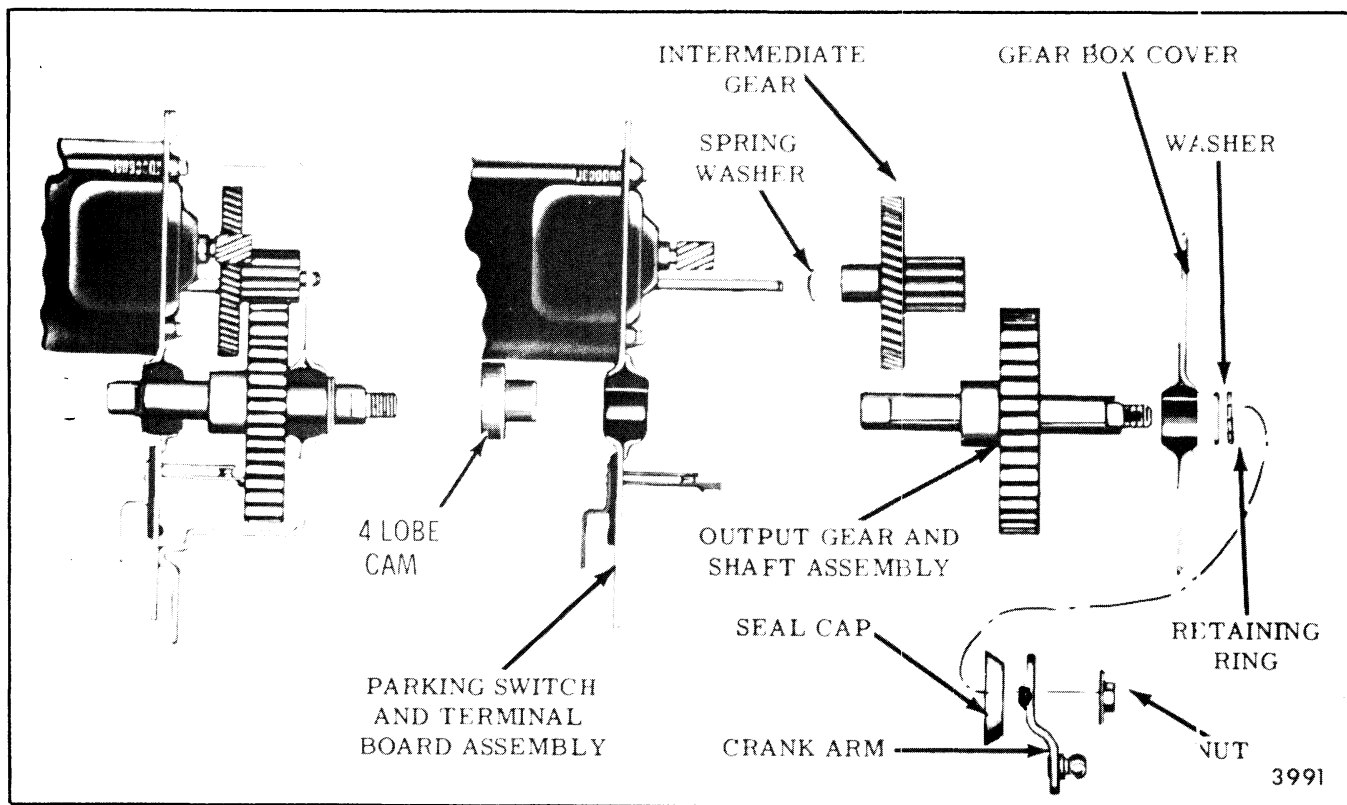


Fig. 2-12-Gear Box

3. Install output gear and shaft assembly with cam at least 90 degrees away from park switch (Fig. 2-15).
4. Assemble gear box cover to wiper. Be careful to locate cover over locating dowels and intermediate gearshaft.
5. Secure cover to gear mounting plate over dowels. Be sure to reinstall ground strap.

**NOTE:** Screws, nuts and lockwashers for reassembling cover to wiper are contained in a Service Repair Package.

6. Reassemble end play washers and retaining ring over output gearshaft (Fig. 2-12). Use end play washers as required to obtain .005" maximum end play.
7. Install seal cap.

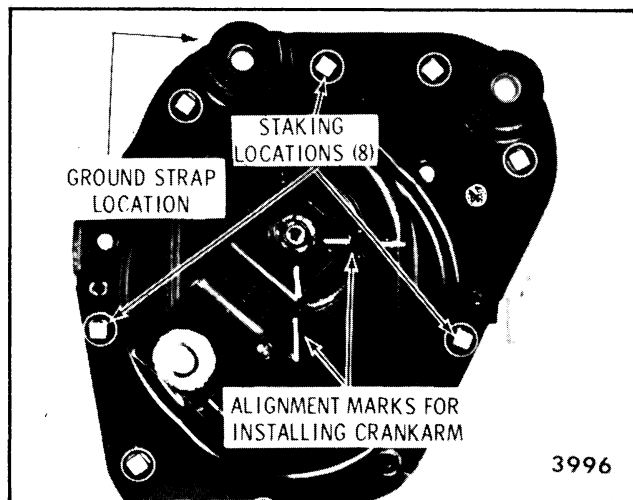


Fig. 2-13-Staking Locations

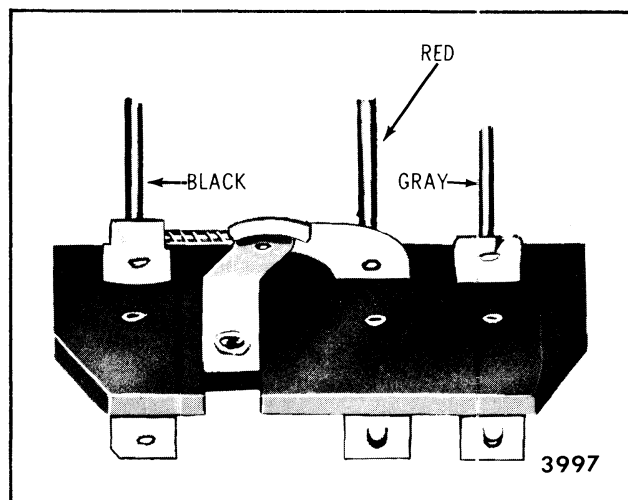


Fig. 2-14-Parking Switch and Terminal Board

8. To reassemble crankarm in proper position, operate wiper to park or "OFF" position (Fig. 2-5) and install crankarm so that index marks on crankarm line up with those on the gear box cover (Fig. 2-13).

**CAUTION:** Clamp crankarm in vise before securing the retaining nut.

9. Operate wiper (Fig. 2-5) and check performance per data in specification chart (Fig. 2-19).
10. Reinstall washer pump to wiper.

Reinstall washer pump to wiper, reversing removal Steps 1 a through 1 c. Observe precautions listed below.

1. Support crankarm end of wiper output shaft (threaded end) and using a suitable mallet, drive the four lobe cam on the wiper output shaft until it bottoms against the shoulders of the shaft flats (Fig. 2-12).
2. Position four lobe cam as shown in Figure 2-16. It may be necessary to manually rotate crankarm.

### Motor Disassembly

1. Disassemble gear box as required to gain access to internal solder connections at wiper terminal board and unsolder motor leads from terminals.

**NOTE:** Step 1 necessary for frame and field replacement only.

2. Remove motor tie bolts (Fig. 2-17).
3. Hold end cap against frame and field and disengage complete motor section from gear box.

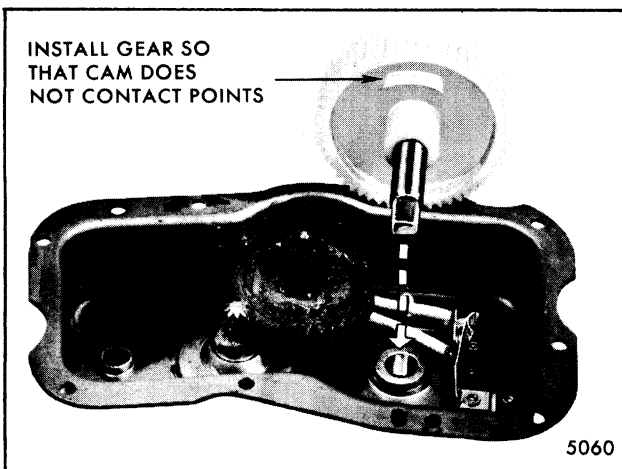


Fig. 2-15-Gear Installation

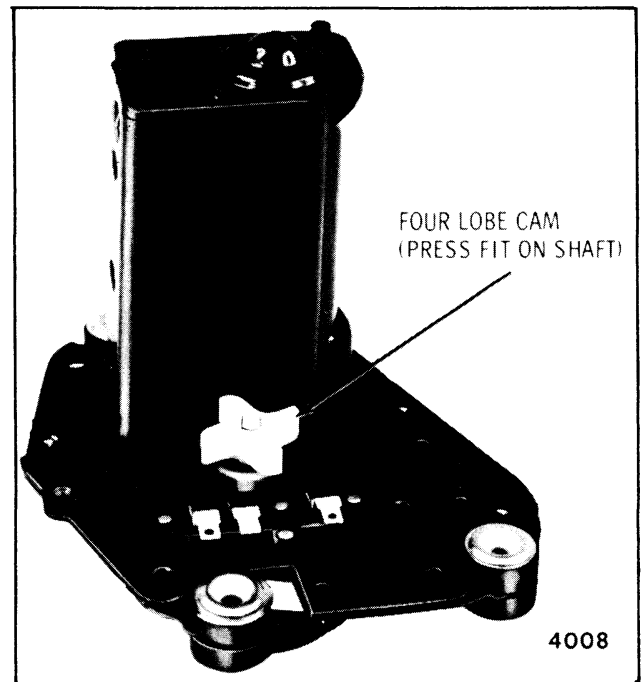


Fig. 2-16-Cam Positioning

4. Turn motor section as required to gain access to brush plate assembly and release brush spring pressure against brushes (Fig. 2-18).
5. Move brushes away from armature commutator and remove armature and end cap from frame and field assembly.
6. Remove end cap from end of armature shaft.

**CAUTION:** Be careful not to lose the plastic thrust plug in end of armature.

7. Remove end play washers from commutator end of armature shaft. When reassembling armature in wiper, install washers as shown in Figure 2-17.

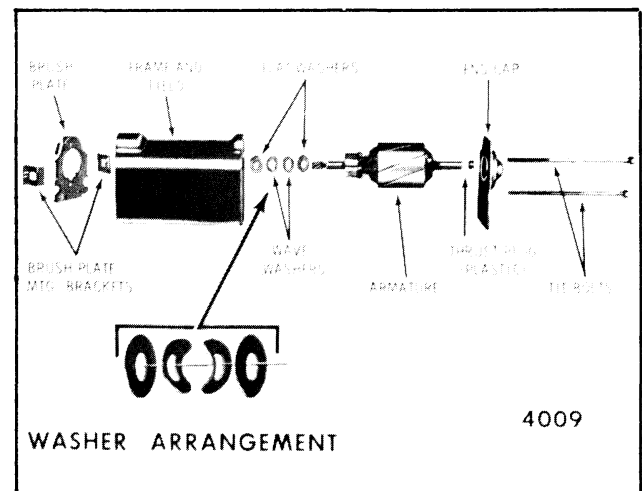


Fig. 2-17-Wiper Motor-Exploded View

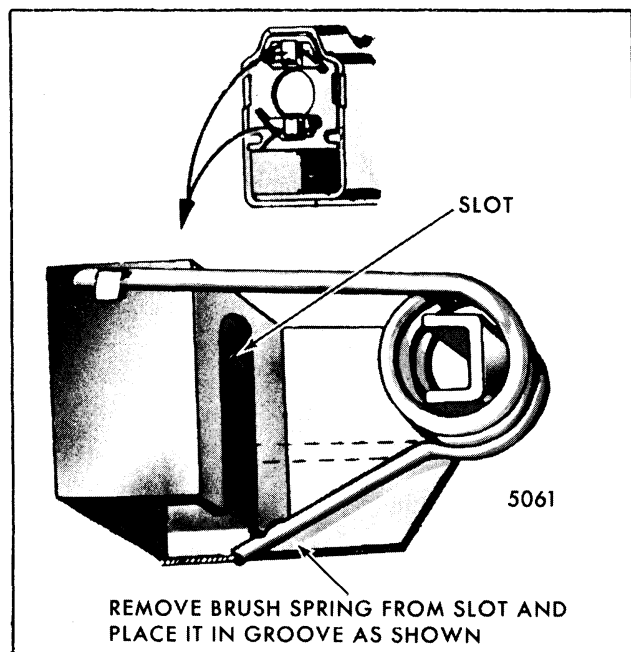


Fig. 2-18-Removing Brush Spring Tension

8. To replace brushes, cut brush pigtail approximately 1/4" from splicing clip. Splice the new brush pigtail to the 1/4" of pigtail left from the original brush.

**NOTE:** Splicing clips are provided in the replacement brush packages.

### Motor Reassembly

Reverse disassembly Steps 1 through 7 and reassem-

SPECIFICATION CHART	
Operating Voltage . . . . .	12 Volts D.C.
Current Draw (No Load)	
"Lo" Speed . . . . .	4.0 AMPS MAX.
"Hi" Speed . . . . .	3.5 AMPS MAX.
Stall (Cold Motor) . . . . .	12.0 AMPS MAX.
Crankarm Speed (RPM's)	
"Lo" Speed . . . . .	31 Min. 12 V
"Hi" Speed . . . . .	55 Min. 12 V
Torque	Inch Pounds
Washer Pump Mounting Screws . . . . .	18
Motor Tie Bolts . . . . .	30
Motor Crankarm Attaching Nut . . . . .	100 - 130
Motor Crankarm to Transmission Drive Link . . . . .	25 - 35
Motor to Body Attaching Bolts . . . . .	30 - 45
Transmission to Body Attaching Bolts . . . . .	48 - 72
Lubrication	
Armature Shaft	Multifak EP-1 Or Equivalent
Bearings	
Gear Teeth	
Seal Cap (Inside)	
	4822

Fig. 2-19-Specification Chart-Rectangular Motor

ble gear. Lubricate the motor assembly as indicated in Specification Chart, Figure 2-19.

**NOTE:** Insure brush plate mounting brackets are properly seated into housing.

## TWO SPEED-ROUND MOTOR

### DESCRIPTION

The round motor used on the "A", "B", "C", "D" and "E" styles is approximately 4 1/2" in length (Fig. 2-20). The motor uses a drive gear with a gear ratio of 51:1.

The round motor used on "F" styles is approximately 4" in length (Fig. 2-20). The motor uses a drive gear with a gear ratio of 45:1.

The service procedures for both motors are the same.

A round motor application chart is shown in Figure 2-21.

In the round two speed motor the brush plate and circuit breaker assembly is attached to a field assembly that is staked into the end cap. The end cap and

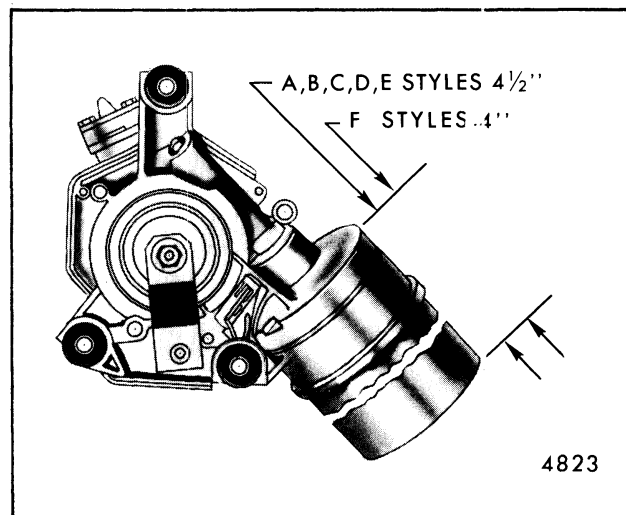


Fig. 2-20-Wiper Assembly

field assembly will be serviced as a unit (Fig. 2-40). The brush plate and circuit breaker must be detached from the field assembly in order to replace the armature. The motor has only two external leads.

The 12 volt circuit to the center terminal of the wiper terminal board is completed through the ignition switch and fuse.

Moving the wiper switch to the "LO" speed position (Fig. 2-22) completes the relay coil circuit to ground at the wiper switch. With the relay coil energized, the relay contacts close completing the 12V circuit to the motor windings. Current then flows through the series field coil and divides, part passing through the shunt field coils to ground at the wiper switch, the other through the armature to ground through the internal circuit breaker.

Moving the wiper switch to the "HI" speed position (Fig. 2-23) maintains the relay coil circuit to ground at the wiper switch, but opens the shunt field circuit to ground at the switch. The shunt field current then flows through the resistor located on wiper terminal

ROUND MOTOR APPLICATION CHART				
CAR DIVISION	SERIES	MOTOR LENGTH	GEAR RATIO	CRANKARM LETTER
CHEVROLET and PONTIAC	A	4 1/2"	51:1	AG
	B	4 3/4"	51:1	AL
	F	4"	45:1	Y
OLDSMOBILE and BUICK	A	4 1/2"	51:1	AG
	B-C-E	4 3/4"	51:1	AL
CADILLAC	C-D-E	4 1/2"	51:1	AL
4824				

Fig. 2-21-Round Motor Application Chart

board to ground. With a weakened shunt field, the motor runs faster.

Moving the wiper switch to the "MED" speed position (Cadillac Only) connects a 13 ohm resistor, located in the switch, in parallel with the 20 ohm

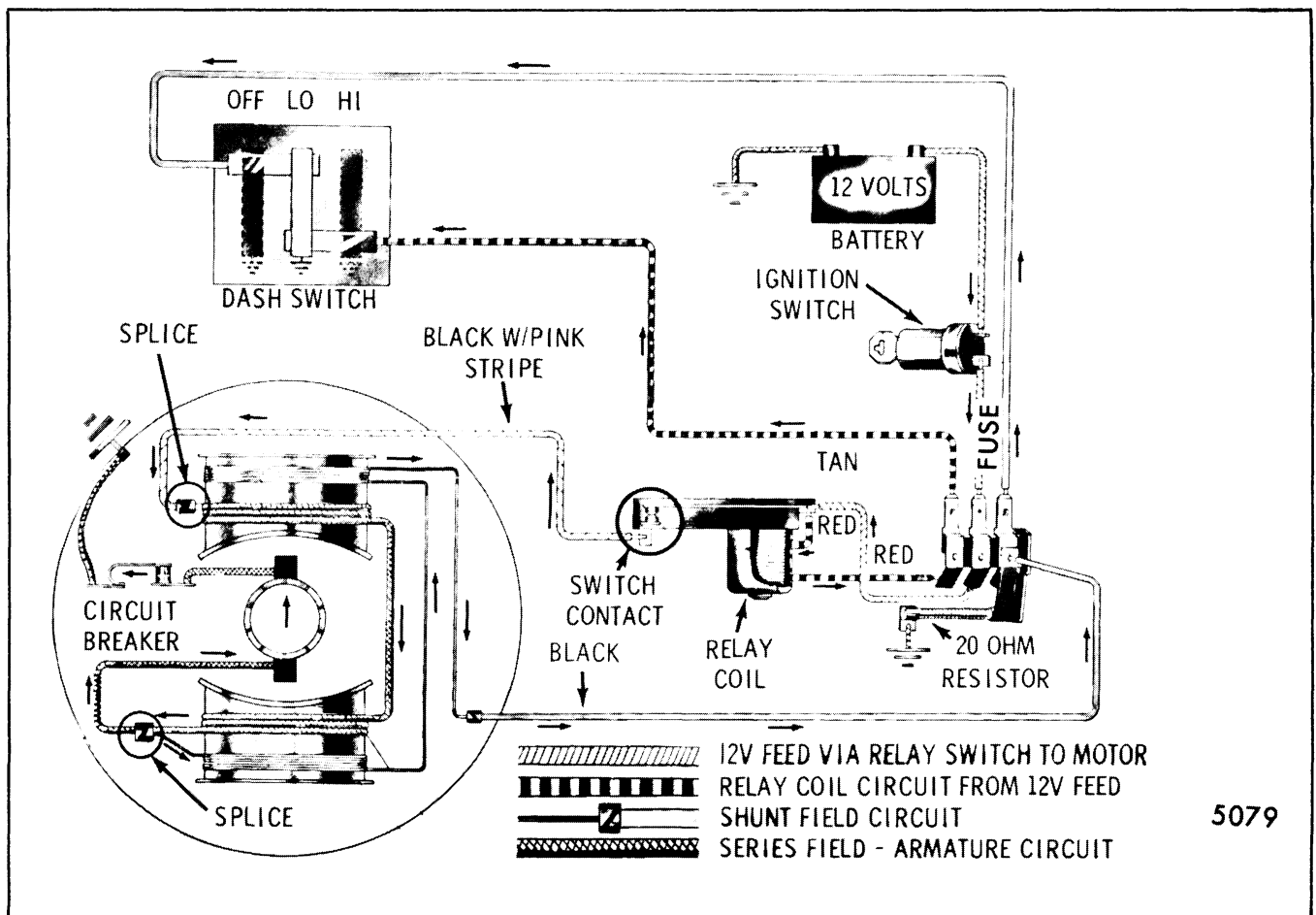


Fig. 2-22-"LO" Speed Circuit

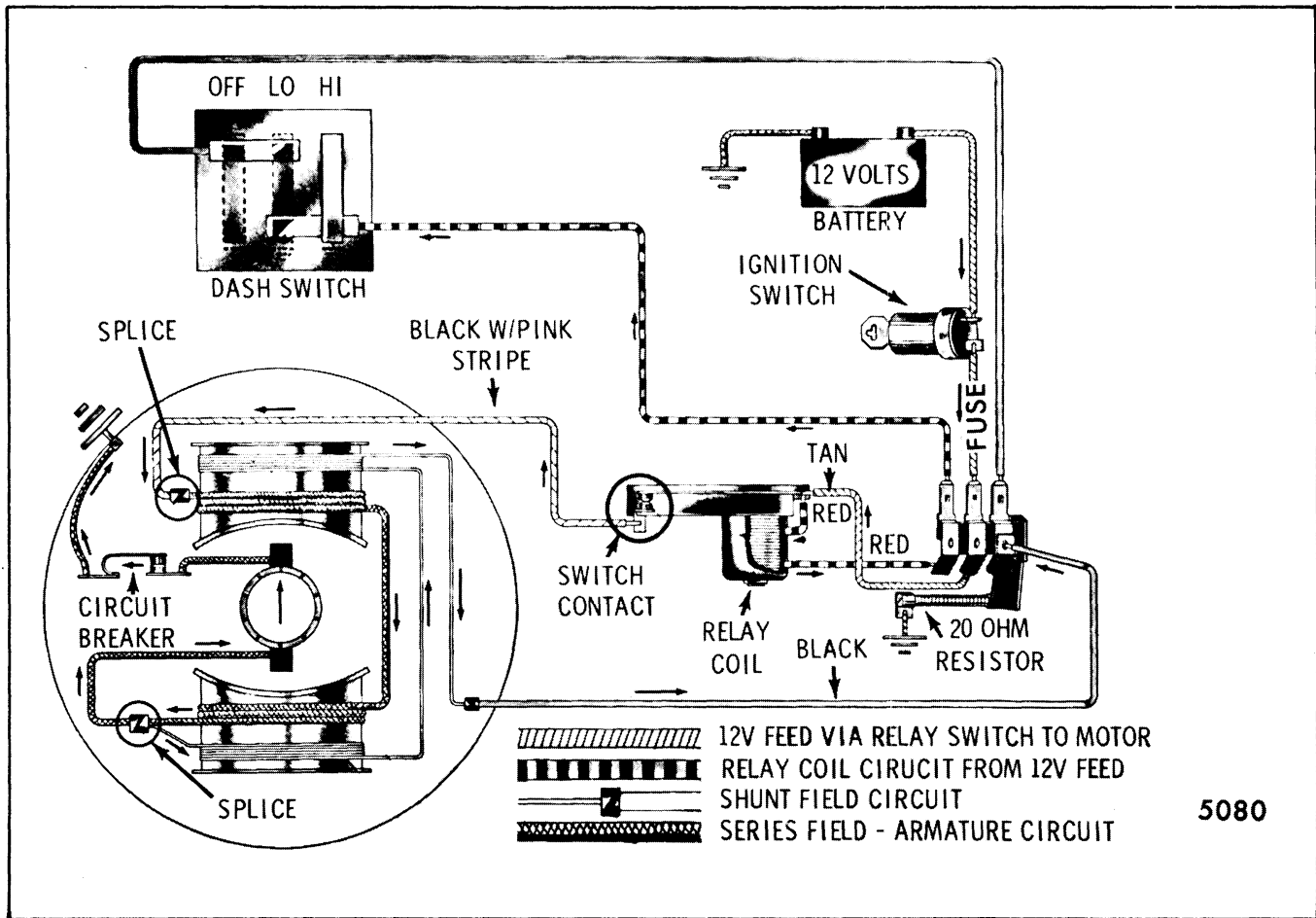


Fig. 2-23-"HI" Speed Circuit

resistor from the shunt field circuit. These two resistors, connected in parallel, provide slightly less than 8 ohms resistance in the shunt field. The difference in resistance results in medium speed.

Turning the wiper switch off (Fig. 2-24) is merely the first step in shutting the wiper off. The wiper motor itself actually completes the shutting off operation. When the wiper switch is moved to the "OFF" position, two simultaneous functions are accomplished:

1. The relay coil circuit is opened and this allows the spring loaded relay latch arm to move out into the path of the gear drive pawl (Fig. 2-25). The relay-switch contacts, however, are still closed at this stage of operation and the wiper motor continues to run.
2. The shunt field circuit is connected to ground at

the switch and the wiper operates in "LO" speed during this stage.

The wiper gear mechanism completes shutting off the wiper as follows:

Since the wiper motor continues to run when the switch is first turned off, the continuing rotation of the gear causes the drive pawl to engage the relay latch arm (Fig. 2-26). This action unlocks the gear from the drive pawl, lock pawl and the drive plate and output shaft assembly. With the drive plate and output shaft unlocked from the gear, and since the output shaft extends through the gear shaft off center, the continuing rotation of the gear at this point causes a cam action between the output shaft and the gear shaft. This cam action causes the gear drive pawl to move into the relay switch slot. As the drive pawl moves into the switch slot, it pushes the relay latch arm against the relay switch flexible contact. This action opens the relay-switch contacts which cuts the 12V feed to the motor windings (Fig. 2-27).

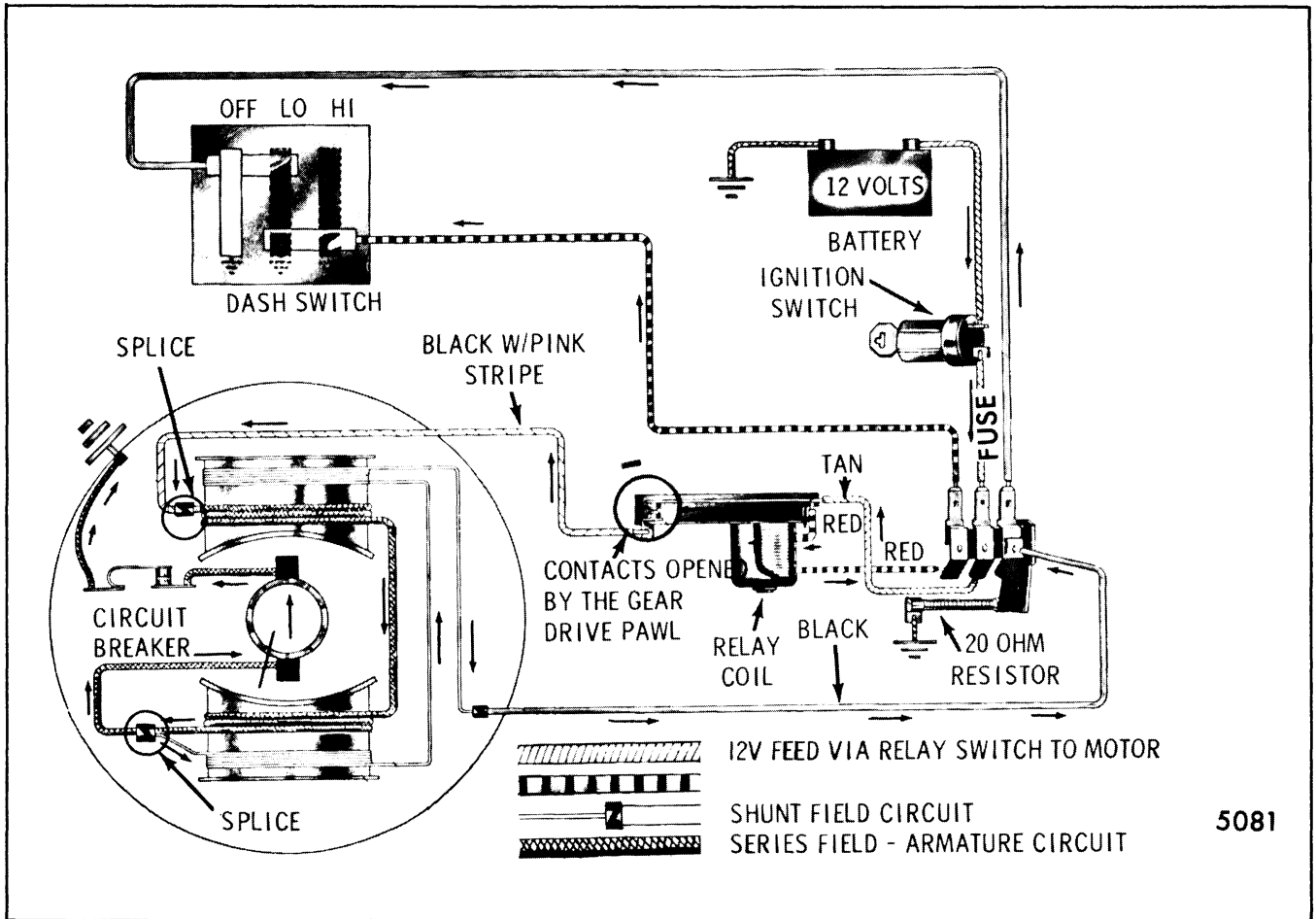


Fig. 2-24-Parking Circuit

## DIAGNOSIS - WIPER ON CAR

### 1. Make a preliminary check of the following items:

- A. Body wiring properly connected to wiper terminal board and wiper switch.
- B. Wiper motor to dash mounting screws tight.
- C. Wiper switch securely mounted.
- D. Fuse.
- E. With ignition switch turned "ON", there is a 12-volt supply at center terminal of wiper terminal board.

2. When checking wiper operation, operate wiper independently of the car wiring or wiper switch, as shown in Figure 2-31. Check wiper operation in "OFF", "LO" and "HI" positions.

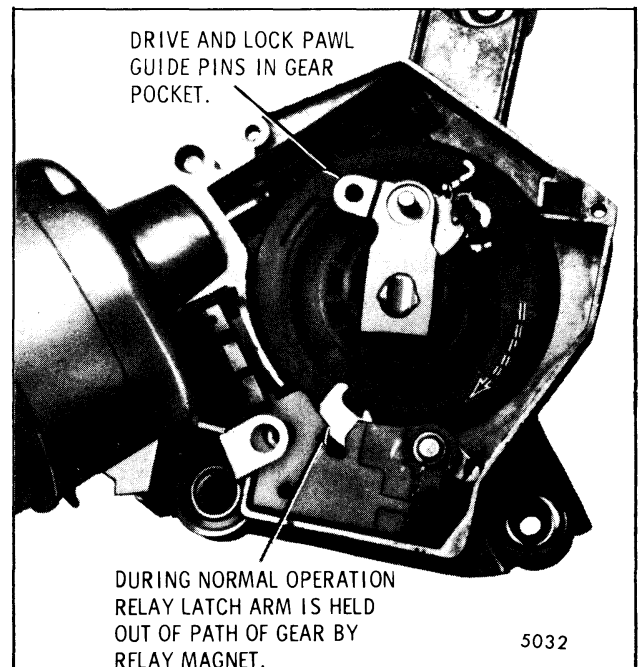


Fig. 2-25-Gear in Normal Run Position

A. If wiper operates correctly, see **DIAGNOSIS CHART-WIPER ON CAR**.

B. If wiper still fails to operate correctly, disconnect wiper linkage from wiper motor and recheck for proper wiper motor operation.

1. If wiper motor operates correctly in Step

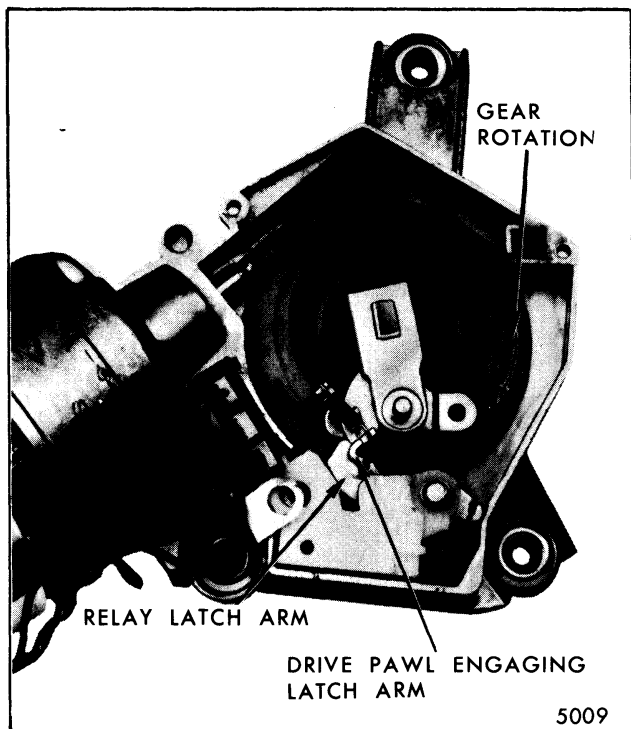


Fig. 2-26-Wiper Shutting "OFF"

2, check linkage for severe binding condition or breakage.

2. If wiper fails to operate correctly in Step 2, remove wiper motor from car and check **DIAGNOSIS CHART - WIPER OFF CAR**.

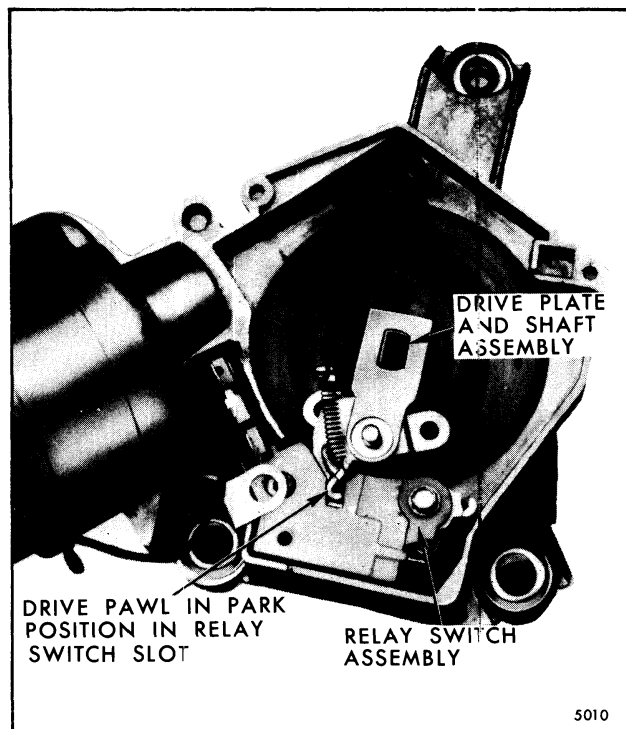


Fig. 2-27-Wiper Shut "OFF" in Park Position

### DIAGNOSIS CHART - WIPER ON CAR - LESS DEMAND WIPER SYSTEM

**NOTE:** For Demand Wiper System see preliminary inspection and diagnosis chart in the Programmed Washer System section.

**NOTE:** Ignition switch must be "ON" for all electrical tests.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	A. Open lead wire from wiper terminal No. 1 to wiper switch.	A. Repair broken wire
	B. Wiper switch not securely mounted.	B. Tighten switch mounting.
	C. Wiper switch defective.	C. Replace wiper switch.

## DIAGNOSIS CHART - WIPER ON CAR - LESS DEMAND WIPER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
2. Will not shut off (Blades make full wipe stroke)	A. Grounded lead wire from wiper terminal No. 1 to wiper switch.  B. Corroded wiper terminals.  C. Defective wiper switch.	A. Tape uninsulated portion of wire.  B. Clean terminals.  C. Replace wiper switch.
3. Will not shut off (Blades move up and down about 15 degrees from park position.)	A. Open in lead wire from wiper terminal No. 3 to wiper switch.  B. Wiper switch mounting loose.  C. Wiper switch defective.	A. Repair broken wire.  B. Tighten switch mounting.  C. Replace wiper switch.
4. "HI" speed only.	A. Open lead wire from wiper terminal No. 3 to wiper switch.  B. Wiper switch defective.	A. Repair broken wire.  B. Replace wiper switch.
5. "LO" speed only	A. Grounded lead from wiper terminal No. 3 to wiper switch.  B. Defective wiper switch.	A. Tape uninsulated portion of wire.  B. Replace wiper switch.
6. "HI" speed in "MED" position (Cadillac only)	A. Open medium speed resistor.	A. Replace wiper switch.



## DIAGNOSIS CHART - WIPER OFF CAR - LESS DEMAND WIPER SYSTEM

**NOTE:** For Demand Wiper System see Preliminary Inspection and Diagnosis Chart in the Programmed Washer System section.

**NOTE:** Before using chart, try operating wiper as

shown in Figure 2-31. Check if wiper has "LO" and "HI" speeds and shuts off correctly. Match the trouble found with the trouble shown in the chart. Use checking procedure following this chart by letter as indicated to locate cause of trouble.

CONDITION	APPARENT CAUSE	CHECKING PROCEDURE
1. Wiper Inoperative (Motor doesn't run)	1. Open relay coil 2. Circuit breaker open 3. Open armature 4. Motor series field open 5. Brushes sticking 6. Defective solder joints-relay switch 7. Binding condition-relay latch arm	A
2. Wiper will not shut off (Crankarm rotates through 360 degrees)	1. Relay coil grounded 2. Relay latch spring disconnected or broken 3. Latch arm binding	B
3. Wiper will not shut off (Crankarm moves back and forth in a horizontal plane accompanied by a loud "knock")	1. Relay switch contacts shorting together 2. Drive pawl spring disconnected 3. Wiper has one speed, "HI", caused by open shunt field	C
4. Wiper has one speed, "HI"	1. Shunt field open 2. Defective soldering at terminal No. 3 on wiper terminal board	C
5. Wiper has one speed, "LO"	1. Shunt field internally grounded 2. Shunt field lead to terminal board (black) grounded 3. Shorted armature	D
6. Wiper has excessive speed in "HI"; "LO" speed normal	1. Open speed resistor 2. Poor resistor ground connection	E

## DIAGNOSIS CHART - WIPER ON CAR - LESS DEMAND WIPER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
7. Wiper stops at random (Crankarm stops rotating immediately and does not return to full park position.)	1. Relay switch contacts dirty or broken	Clean or replace relay switch assembly as required
8. Intermittent Operation	1. Defective circuit breaker (weak) 2. Circuit breaker tripping because of shorted armature and/or fields causing motor to draw excessive current	F
9. No apparent trouble on bench test but fails occasionally on car.	1. Armature end play tight 2. Gear assembly end play tight. 3. Loose solder or weld joints	See Wiper Motor Adjustments

## PROCEDURE "A" (WIPER INOPERATIVE)

1. Remove washer pump to gain access to relay switch assembly.

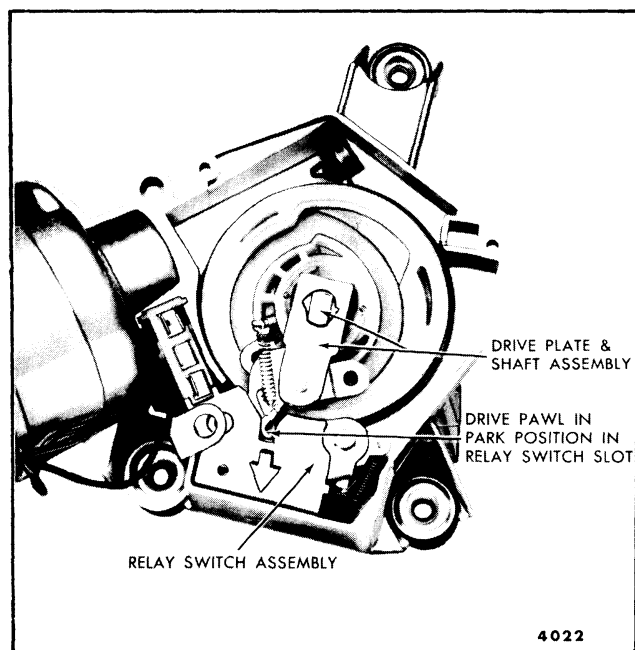


Fig. 2-28-Testing Relay Switch

2. Connect 12-volt source to wiper, feed side to center terminal, ground side to gear housing (Fig. 2-31). Do not connect jumper to terminal 1 and 3.

3. To determine if relay coil is open, connect test

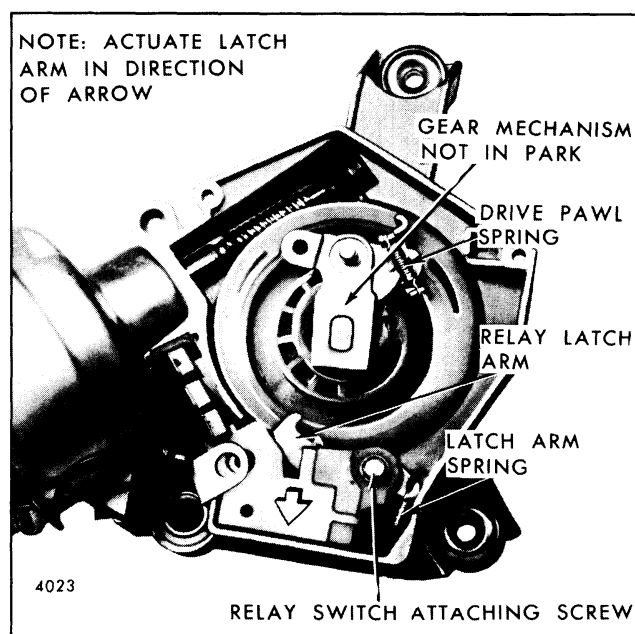


Fig. 2-29-Latch Mechanism

lamp to wiper terminal No. 1. Test lamp should light.

4. Test relay switch as follows:

a. If gear mechanism is in full park position, insert a small screwdriver into the switch slot (between the drive pawl and the relay latch arm) and push relay latch arm downward and toward the relay coil in direction of the arrow in Figure 2-28. Next, remove a small amount of insulation from black lead with pink tracer and touch test lamp to exposed wire.

b. If test lamp lights but motor doesn't run. Proceed to Step 5.

c. If test lamp doesn't light, relay switch defective.

**NOTE:** Cover exposed wire with tape after the test.

5. Disassemble motor section and check the following:

a. Hung brush.

b. Solder connections at brush holders.

c. Splice joints at field coil connections to leads.

d. Open armature.

e. Circuit breaker ground connection on field lamination.

f. To check the circuit breaker, disassemble motor section of wiper and visually inspect the circuit breaker for dirty or burned contacts or solder connections to circuit breaker terminals (Fig. 2-30).

### PROCEDURE "B" (WIPER WILL NOT SHUT OFF-CRANKARM ROTATES 360 DEGREES)

1. Observe if relay latch arm spring is connected properly (Fig. 2-29).

2. Manually operate latch arm to check it for possible binding condition.

3. If items in 1 and 2 check out, connect power source to wiper and connect jumper wire from terminal No. 3 to wiper housing. **DO NOT** make any connections from terminal No. 1. Manually actuate latch arm in direction of arrow (Fig. 2-29) and observe if it remains in energized position (inside plastic switch housing out of path of gear drive pawl). If it remains in energized position, check for grounded red lead from coil to terminal No. 1. If red lead is not grounded, coil is probably grounded internally and relay switch should be replaced.

### PROCEDURE "C" (WIPER WILL NOT SHUT OFF-RECYCLES)

**NOTE:** Crankarm oscillates in a somewhat horizontal plane and is accompanied by a loud "knock" with each revolution of the gear.

1. Check that drive pawl and relay latch arm springs are properly connected (Fig. 2-29).

2. Check wiper for "LO" speed operation (Fig. 2-31). If wiper has "HI" speed only, check the following items:

a. Solder joint at No. 3 wiper terminal.

b. Splice joint - field coil cross-over splice - (Fig. 2-40).

c. Splice joint - black lead to field coil.

3. Check relay switch as follows:

a. Remove small amount of insulation from black lead with pink stripe and connect test

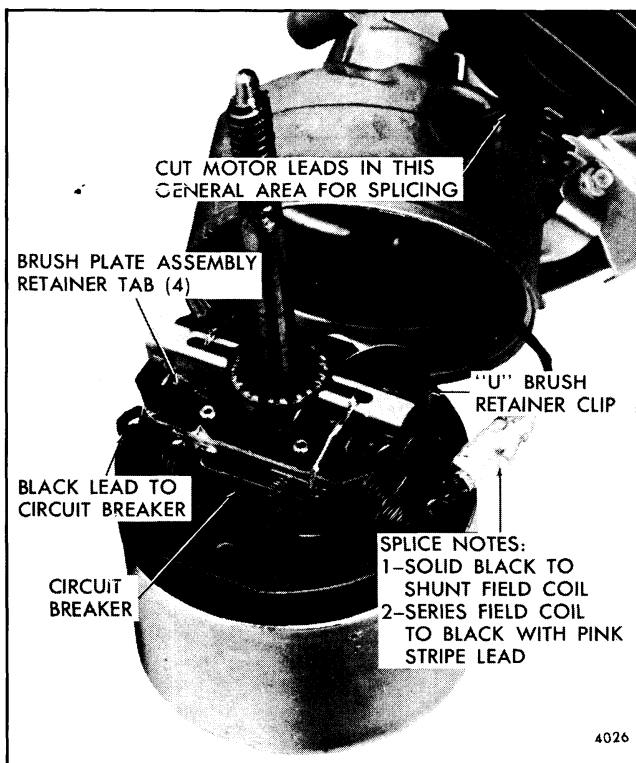


Fig. 2-30-Brush Plate Assembly

light between exposed wire and wiper housing.

- b. Connect positive side of power source to terminal No. 2 and negative side to motor case. Install jumper wire from terminal No. 1 to motor case. Observe if test light goes out once for each revolution of gear or if light glows steadily. If light glows steadily, relay switch contacts are not opening and switch is defective. If light goes out each time drive pawl moves into relay switch slot, relay switch is functioning correctly.

#### PROCEDURE "D" (WIPER HAS ONE SPEED, "LO")

1. Check for grounded condition in the internal black lead that connects to wiper terminal No. 3. Refer to Figure 2-31 for terminal No. 3 location.

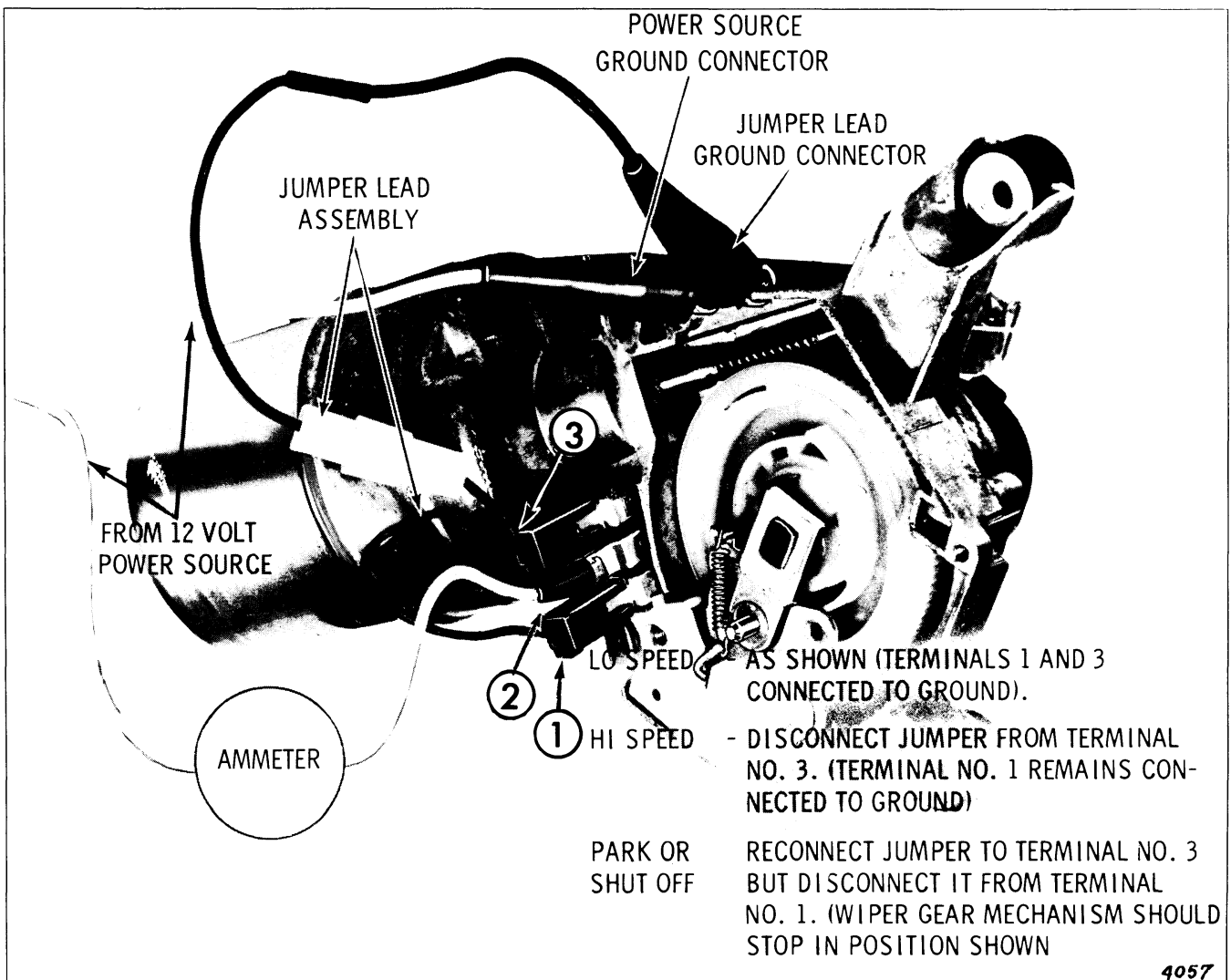
2. Disassemble motor section of wiper and check for grounded shunt field coil (Fig. 2-39).

#### PROCEDURE "E" (WIPER HAS EXCESSIVE SPEED IN "HI" BUT "LO" SPEED IS NORMAL)

1. Check for open 20 ohm resistor and the resistor ground connection (Fig. 2-43).

#### PROCEDURE "F" (INTERMITTENT OPERATION)

1. Check solder connections at wiper terminal board.
2. Connect wiper to operate in "LO" speed (Fig. 2-31). Connect ammeter (range 0-30 amps.) in feed wire circuit to wiper and observe current



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Fig. 2-31-Bench Checking Wiper Motor

draw. Allow motor to run until it becomes hot (see Specification Chart Fig. 2-50).

- a. If current draw is normal and wiper cycles on and off, a weak circuit breaker is indicated. Replace brush plate assembly.
- b. If current draw exceeds specification, proceed to Steps 3, 4 and 5.
3. Adjust armature end play as required and recheck current draw.
4. Adjust gear assembly end play as required and recheck current draw.
5. If adjustments in Step 3 and 4 fail to correct excessive current draw condition, disassemble motor section of wiper and check armature on growler for shorted or grounded condition.

### WIPER MOTOR

#### Removal and Installation

1. Raise hood and remove cowl screen.

2. Reaching through opening, loosen the transmission drive link to crankarm attaching nuts (Fig. 2-32 or 2-33).
3. Remove transmission drive link(s) from motor crankarm.
4. Disconnect wiring and washer hoses.
5. Remove the three motor attaching screws.
6. Remove motor while guiding crankarm through hole.
7. To install, reverse the removal procedure. Motor must be in park position when assembling crankarm to transmission drive link(s).

### WIPER ARM

#### Removal and Installation

1. Raise hood to gain access to wiper arms.
2. On "A" and "F" styles, use tool J-22128 or J-8966, or equivalent, (Fig. 2-34 or 2-35) and lift

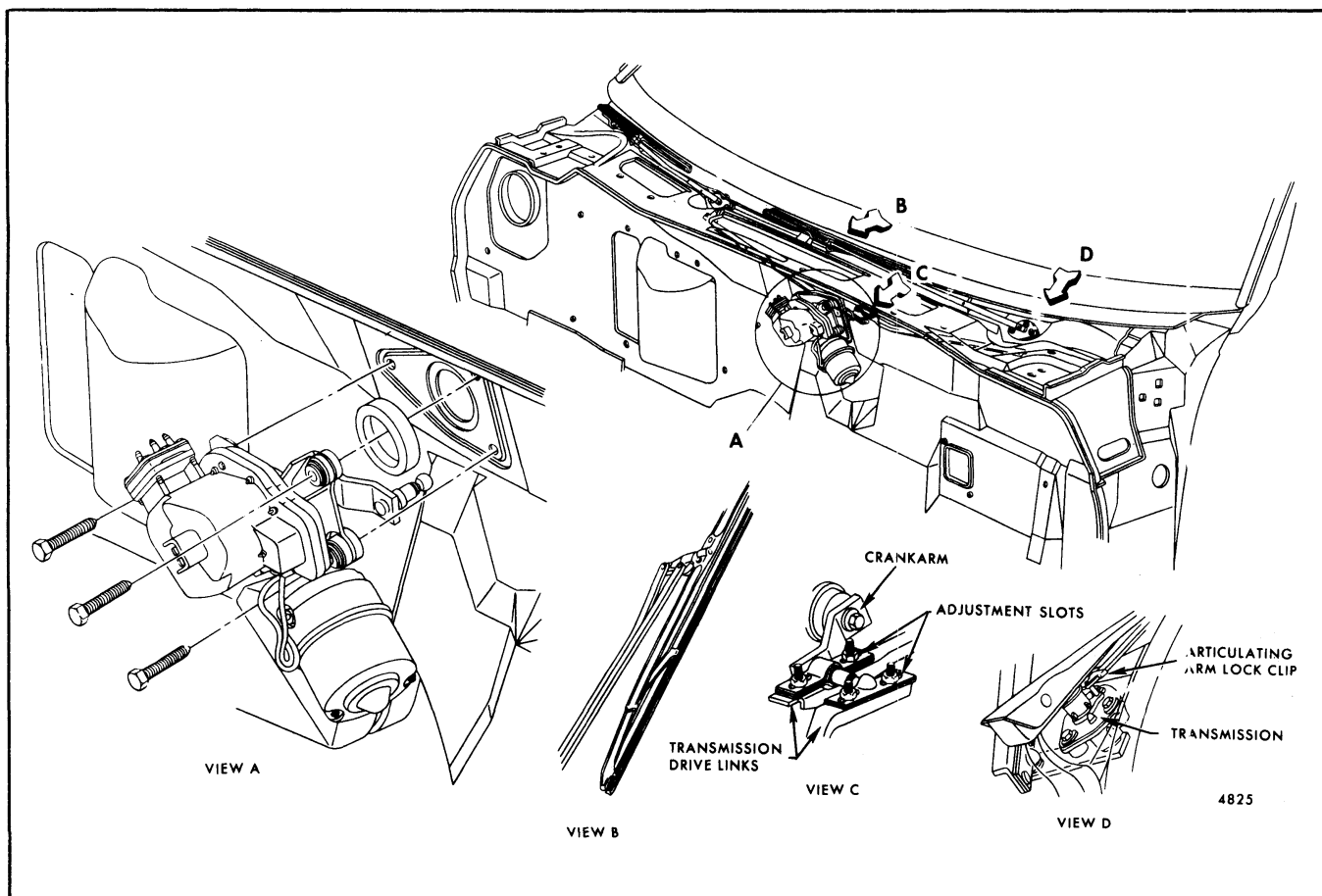


Fig. 2-32-Round Motor Installation - "B-C-D-E" Styles

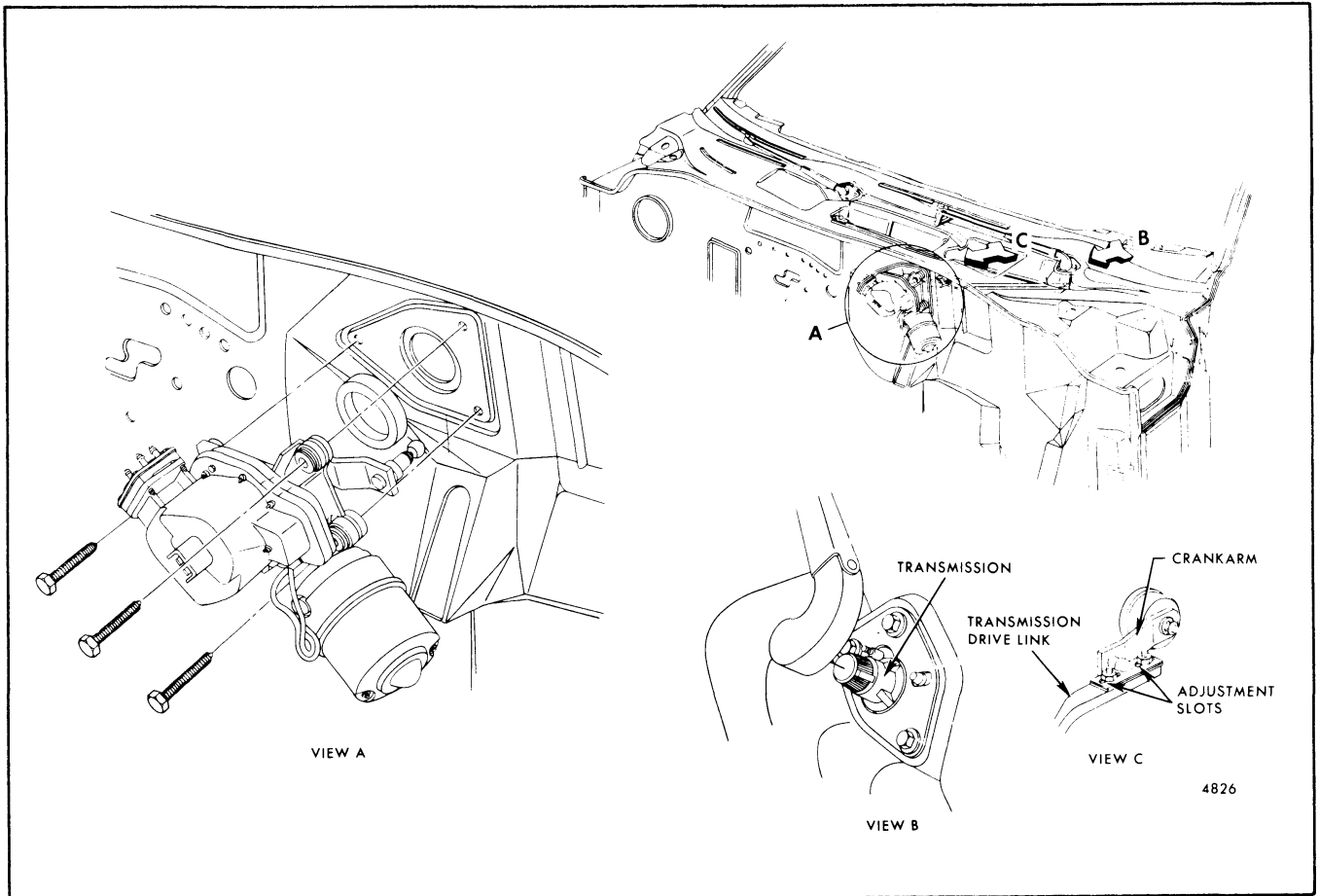


Fig. 2-33-Round Motor Installation "A" Styles

arms off transmission shaft. On left arm slide articulating arm lock clip away from transmission pivot pin and lift arm off pin.

3. On "B", "C", "D" and "E" styles, lift wiper arm and slide latch clip (Fig. 2-36) out from under wiper arm.

4. Release wiper arm and lift wiper arm assembly off transmission shaft.

5. On left arm, slide articulating arm lock clip away from transmission pivot pin (Fig. 2-32) and lift arm off pin.

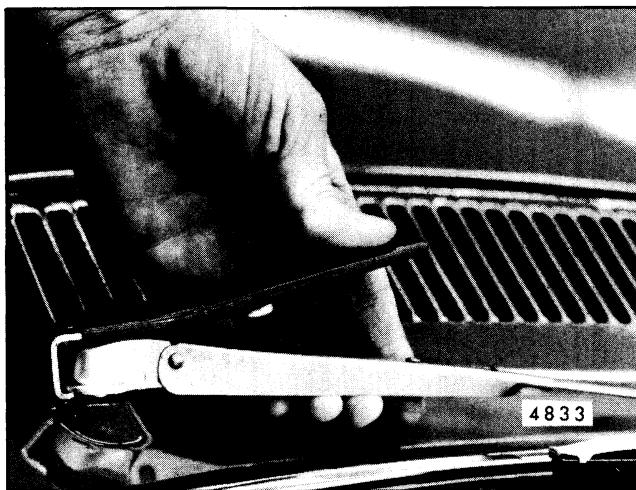


Fig. 2-34-Wiper Arm Removal Tool J-8966

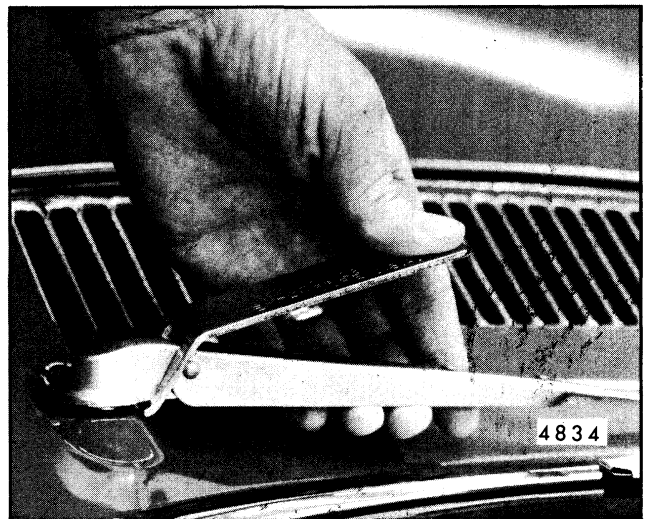


Fig. 2-35-Wiper Arm Removal Tool J-22128

6. To install left wiper arm assembly, on all styles, position the articulating arm over the transmission pivot pin and slide the lock clip toward the pivot pin until it locks in place on the pin. Install the left wiper arm assembly to the transmission shaft aligning the keyway to the shaft.

**NOTE:** On "A" and "F" styles the same tool used for arm removal may be used to install the arm.

7. On "A" and "F" styles align the right wiper arm assembly in the proper park position and install wiper arm to transmission shaft.
8. On "B", "C", "D" and "E" styles, align keyway in right wiper arm assembly to transmission shaft and install arm assembly to shaft.
9. On "B", "C", "D" and "E" styles, lift the wiper arm assemblies and slide latch clips (Fig. 2-36) under the arms. Release wiper arms and check wipe pattern and park position.

## WIPER ARM

### Adjustment

If the wiper arms and blades were in correct adjustment prior to wiper arm removal, adjustment should not be required. However, if adjustment is required, it can be performed as follows:

1. Raise the hood and remove cowl vent screen.
2. On "A" and "F" styles, remove the right arm and blade assembly.
3. Loosen, do not remove, the transmission drive link to motor crankarm attaching nuts (Fig. 2-32



Fig. 2-36-Wiper Arm Latch Clips

or 2-33). On "B", "C", "D" and "E" styles, if only one arm and blade assembly requires adjustment, loosen only the drive link to crankarm attaching nuts for the unit requiring adjustment.

4. Rotate the left arm assembly on "A" and "F" styles and both arm assemblies on "E", "C", "D" and "E" styles to a position 1" below the blade stops.

**CAUTION:** On "B", "C", "D" and "E" styles, even if only one arm and blade assembly requires adjustment, the right and left assemblies must be rotated 1" below the stops.

5. Tighten the attaching nuts on the transmission drive link(s) to motor crankarm (25-35 inch pounds torque).
6. On "A" and "F" styles, position the right arm and blade assembly 1" below the blade stop and install arm assembly to transmission shaft.
7. Lift the right and left arm and blade assemblies over the stops.
8. Check wipe pattern (Fig. 2-37) and park position. Dimension "A" shown in Figure 2-37 for various body styles is as follows:
  - a. "A-29-35" styles - 1.75" plus 1.50" or minus .00"
  - b. "A-37-57-80" styles - 1.12" plus 1.50" or minus .00"
  - c. "B-35-45-49-69" and 26847 styles - 2.00" plus 1.50" or minus .00"
  - d. "B-39-47-57-67" (less 26847) styles - 1.50" plus 1.50" or minus .00"
  - e. "C-39-49-69-37-47" styles - 2.00" plus 1.50" or minus .00"
  - f. "D-23-33" styles - 2.00" plus 1.50" or minus .00"
  - g. "E-47-57-67-87" styles - 1.50" plus 1.50" or minus .00"
  - h. All "F" styles - 1.25" plus 1.10" or minus .5"

**NOTE:** The correct park position and outwipe dimension is determined with the wipers operating at "LO" speed on a wet glass.

9. Install cowl vent screen.

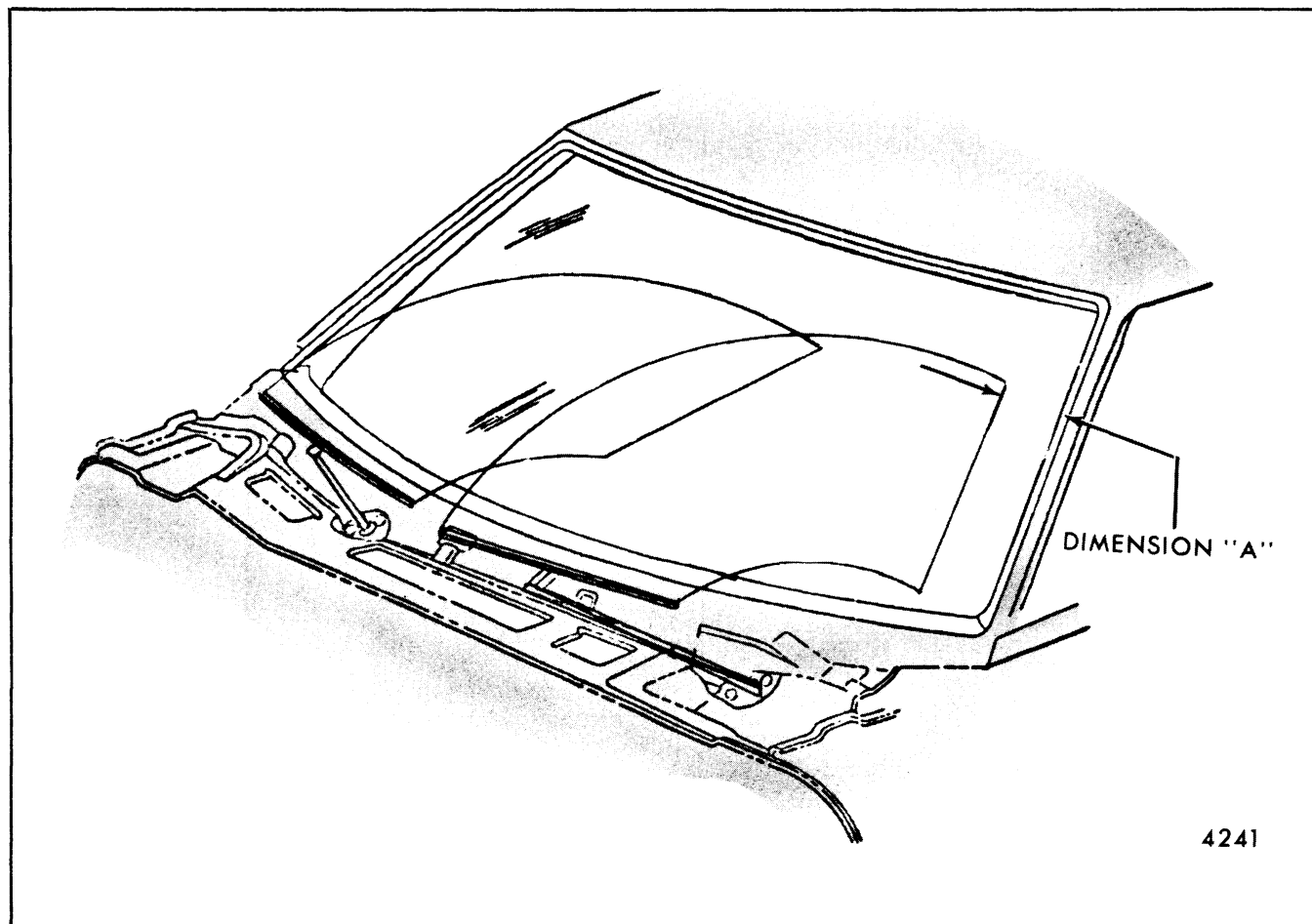


Fig. 2-37-Wipe Pattern

## WIPER BLADE

### Removal and Installation

Two methods are used to retain wiper blades to wiper arms (Fig. 2-38).

1. One method uses a press type release tab. When the release tab is depressed the blade assembly can be slid off the wiper arm pin.
2. The other method uses a coil spring retainer. A screw driver must be inserted on top of the spring and the spring pushed downward (Fig. 2-38). The blade assembly can then be slid off the wiper arm pin.

Two methods are also used to retain the blade element in the blade assembly (Fig. 2-38).

1. One method uses a press type button. When the button is depressed, the blade assembly can be slid off the blade element.

2. The other method uses a spring type retainer clip in the end of the blade element. When the retainer clip is squeezed together, the blade element can be slid out of the blade assembly.

When installing a blade element into a blade assembly, be certain to engage the metal insert of the element into all retaining tabs of the blade assembly.

**NOTE:** When properly installed, the element release button, or spring type element retaining clip should be at the end of the wiper blade assembly nearest the wiper transmission.

## WIPER TRANSMISSION

### Removal and Installation

1. Raise hood and remove cowl vent screen.
2. On "A" and "F" styles, remove right and left



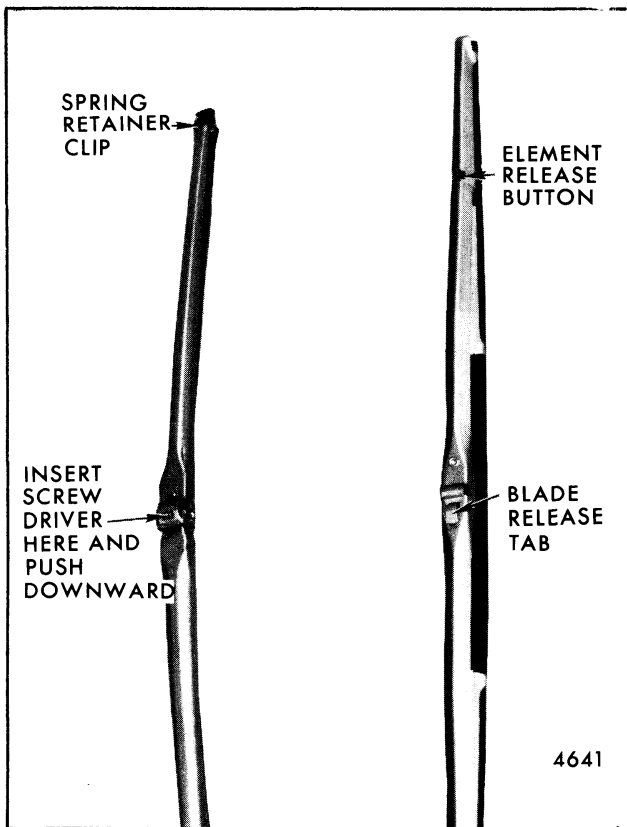


Fig. 2-38-Wiper Blade Assemblies

wiper arm and blade assemblies. On "B", "C", "D", and "E" styles, remove arm and blade assembly only from the transmission to be removed.

3. Loosen (do not remove) attaching nuts securing transmission drive link(s) to motor crankarm (Fig. 2-32 or 2-33).

**NOTE:** On "B", "C", "D" and "E" styles, if only the left transmission is to be removed, it will not be necessary to loosen attaching nuts securing the right transmission drive link to motor crankarm.

4. Disconnect the transmission drive link(s) from the motor crankarm.
5. On "A" and "F" styles, remove the right and left transmission to body attaching screws. On "B", "C", "D" and "E" styles, remove the attaching screws securing the transmission(s), to be removed, to the body.
6. Remove transmission(s) and linkage assembly by guiding it through plenum chamber opening.
7. To install transmission(s) and linkage assemblies, position assembly in plenum chamber through the openings.

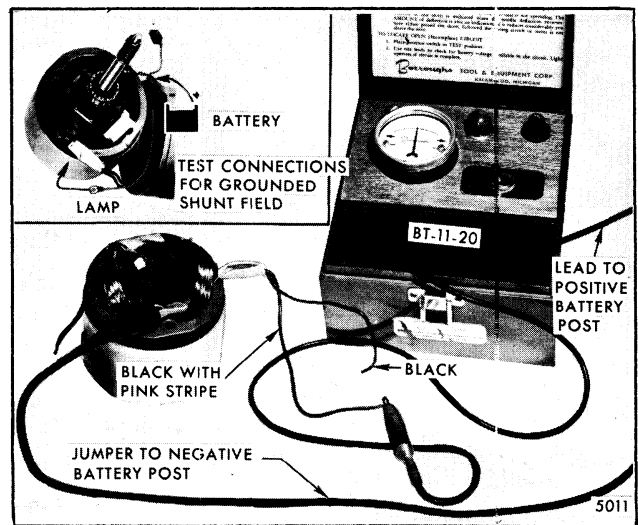


Fig. 2-39-Testing Field Coils

8. Loosely install transmission to body attaching screws.
9. Install transmission drive link(s) to motor crankarm and tighten attaching nuts to 25-35 inch pounds torque (Fig. 2-32 or 2-33).

**NOTE:** Wiper motor must be in park position.

10. Align transmission(s) and tighten attaching screws to body.

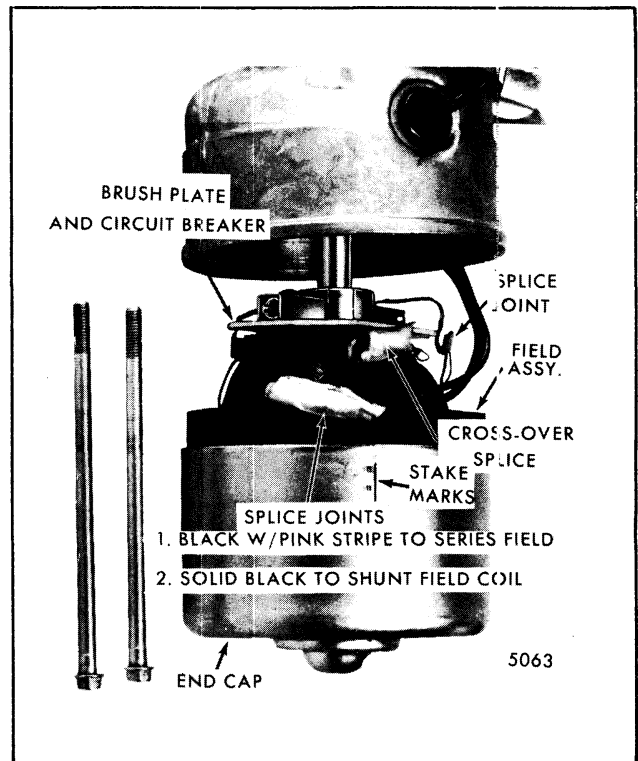


Fig. 2-40-Field and End Cap Assembly

11. Install wiper arm and blade assemblies and adjust as described under WIPER ARM ADJUSTMENT.
12. Check wiper operation, wipe pattern and park position.
13. Install cowl vent screen.

## MOTOR DISASSEMBLY AND ASSEMBLY PROCEDURE

### Brush Plate and Circuit Breaker Removal

1. Scribe a reference line along the side of the casting and end cap to insure proper reassembly.
2. Remove the two motor tie bolts.
3. Feed exposed excess length of motor leads through the casting grommet and carefully back the case and field assembly plus the armature away from the casting (Fig. 2-40).

**NOTE:** It may be necessary to remove the armature end play adjusting screw and insert a rod through the opening in order to apply pressure against the end of the armature.

4. Unsolder the black lead from circuit breaker.
  5. Straighten out the 4 tabs that secure the brush plate to the field coil retainers (Fig. 2-30).
- CAUTION:** Be careful not to break any of the retainer tabs.
6. Install "U" shaped brush retainer clip over brush holder that has brush lead attached to circuit breaker (Fig. 2-30).
  7. Holding the opposite brush from that retained in Step 6, carefully lift the brush holder off the mounting tabs far enough to clear the armature commutator.
  8. Allow the brush held in Step 7 to move out of its holder. Remove the brush spring and lift the brush holder off the armature shaft.

### Armature Removal

1. Follow Steps 1 thru 8 under brush plate removal.
2. Lift armature out of case and field assembly.

3. Remove thrust ball from end of armature shaft and save for reassembly.

**NOTE:** Thrust ball may be easily removed with a magnet.

### Case and Field Assembly Removal

1. Remove brush plate and armature.
2. The end case and field assembly is serviced as a unit. To free the field and case assembly, cut the solid black and black with pink stripe leads in a location convenient for splicing preferably near the wiper terminal board (Fig. 2-30).
3. Remove steel thrust plate and rubber disc from case bearing.

### Motor Reassembly

1. If new field and case assembly is being installed, splice the black and black with pink stripe leads of the new field with the corresponding leads of the wiper.
2. Install the rubber thrust disc, steel thrust disc and felt lubricating washer in the case assembly bearing in the order indicated.
3. Lubricate end of armature shaft that fits in case bearing with recommended type grease (Fig. 2-50). Next, install thrust ball in end of shaft.

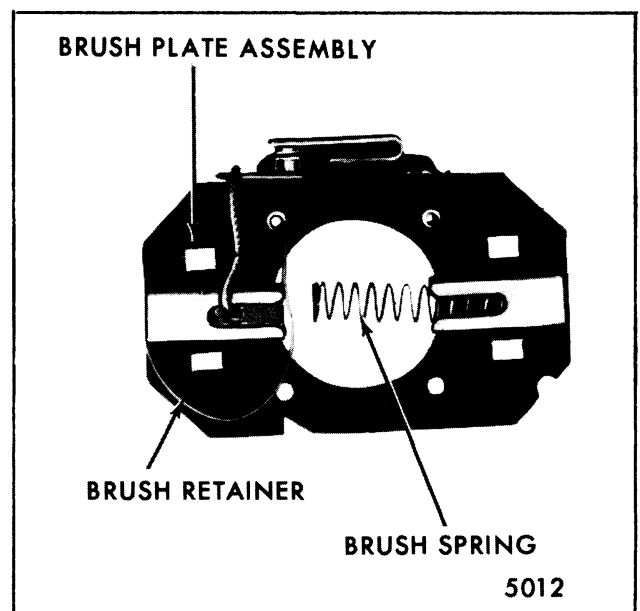


Fig. 2-41-Brush Plate Assembly - Removed

4. Assemble armature in the case and field assembly.
5. Position the partially assembled brush plate (Fig. 2-41) over the armature shaft far enough to allow reassembly of the remaining brush in its brush holder; then position the brush plate assembly on the mounting tabs in the position shown in Figure 2-30.

**NOTE:** Circuit breaker ground lead will not reach circuit breaker terminal if brush plate is positioned wrong.

6. Center the brush plate mounting holes over the mounting tabs and bend the tabs toward the brush holders as required to secure the brush plate in position.

**NOTE:** Be sure tabs are centered in brush plate mounting holes.

7. Remove brush retainer clips and resolder circuit breaker ground lead to circuit breaker.
8. If new case and field assembly is used, scribe a line on it in the same location as the one scribed on the old case. This will insure proper alignment of the new case with the scribed line made on the housing.
9. Position armature worm shaft inside the housing and, using the scribed reference marks, line up as near as possible the case and field assembly with the housing.
10. Maintaining the armature in its assembled position in the case, start the armature worm shaft through the field and housing bearing until it starts to mesh with the drive gear. At the same time carefully pull the excess black and black with pink stripe leads through the housing grommet.

**NOTE:** It may be necessary at this point to rotate armature slightly before the armature worm will engage with drive gear teeth.

11. Rotate the case as required to align the bolt holes in the case with those in the housing.
12. Secure the case to the housing with the two tie bolts.

### GEAR BOX - DISASSEMBLY AND ASSEMBLY PROCEDURES

#### Relay Switch-Latch Assembly Terminal Board Removal

1. Remove washer pump.

**NOTE:** The wiper gear mechanism must be out of the park position to remove the relay switch.

2. If wiper gear drive pawl is in park position (Fig. 2-28), manually trip the relay latch arm, toward the relay coil, and apply feed current to the center terminal of the wiper terminal board and ground to the motor case. The wiper motor will turn the gear, moving the drive pawl out of the park position in the relay slot. If applying feed current to the center terminal does not energize the motor, it is possible to remove some of the insulation from the black with pink stripe wire between the motor and the relay and apply feed current at this point. Be sure to cover the exposed wire with tape after the operation is completed.

If wiper gear mechanism is not in park position (drive pawl away from latch arm Fig. 2-29, proceed to Step 3).

3. Remove relay switch attaching screw and carefully lift the relay switch assembly out of the gear box. Unsolder leads from switch terminals as required. Refer to Figure 2-42 when resoldering leads.
4. To remove terminal board assembly, simply slide it out of housing and unsolder leads as required.

**NOTE:** Tan wire to No. 2 terminal black wire to No. 3 terminal.

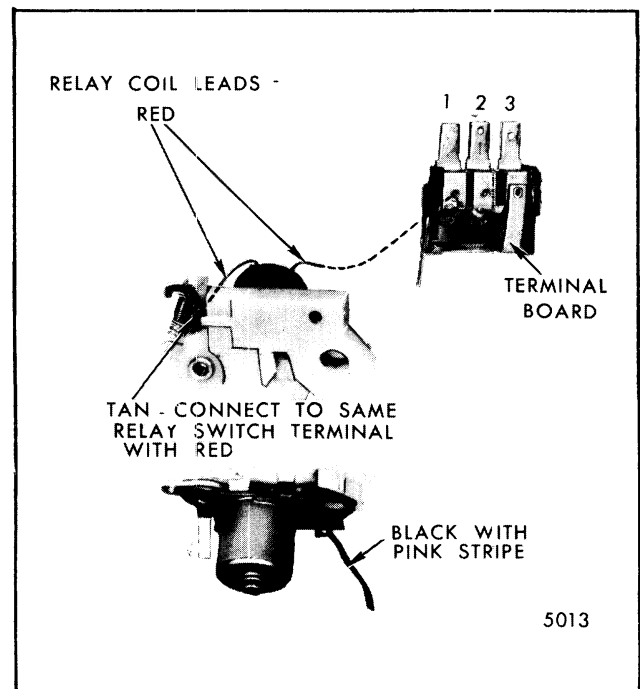


Fig. 2-42-Terminal Board and Latch Relay



Fig. 2-43-Positioning Resistor Lead

### Reassembly of Relay Switch - Latch and Terminal Board

1. Resolder red coil lead to wiper terminal board as required (Fig. 2-42).
2. Slide terminal board into wiper housing being careful to position the terminal board resistor lead as shown in Figure 2-43.

**NOTE:** With the relay switch assembly replaced in the housing and washer pump reinstalled, the relay switch plastic housing applies pressure against the resistor lead to form a positive ground connection to the wiper housing.

3. Resolder leads to relay switch assembly as required.
4. Position relay switch assembly in housing.

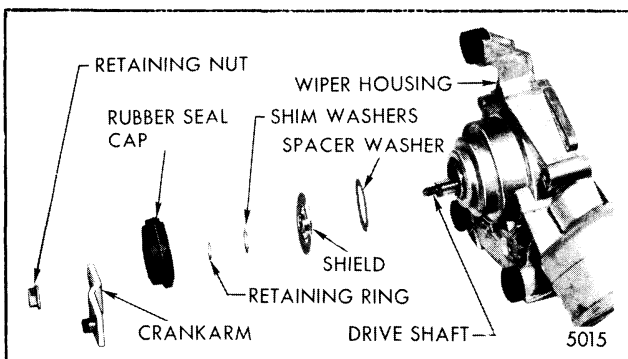


Fig. 2-44-Crank Arm Components-Exploded View

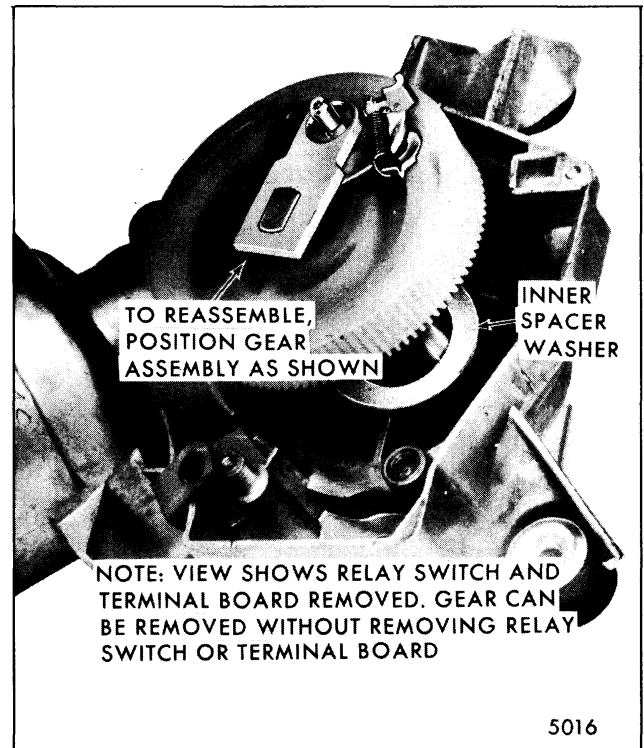


Fig. 2-45-Specification Chart-Round Motor



Fig. 2-46-Gear Removed

**CAUTION:** Be very careful to route leads in such a manner as to avoid having them pinched between relay and wiper housing.

5. Install relay switch attaching screw.
6. Install washer pump to wiper motor.

**NOTE:** Refer to "washer system" - round motor, assembly of washer pump to wiper motor.

### Drive Gear Disassembly

1. Remove washer pump.
2. Remove crankarm retaining nut, crankarm, rubber seal cap, retaining ring, shim washers, shield and spacer washer in the order indicated (Fig. 2-44).
3. Slide gear assembly out of housing (Fig. 2-45).
4. Slide drive plate and shaft out of gear and remove the drive pawl, lock pawl and coil spring as required (Fig. 2-46).

**NOTE:** A drive plate and shaft assembly with two grooves machined in the shaft can be used to service all 1968 through current model depressed park wiper systems. Service instructions included in any replacement package call out which groove to use.

### Drive Gear Reassembly

1. Position drive pawl on drive plate.

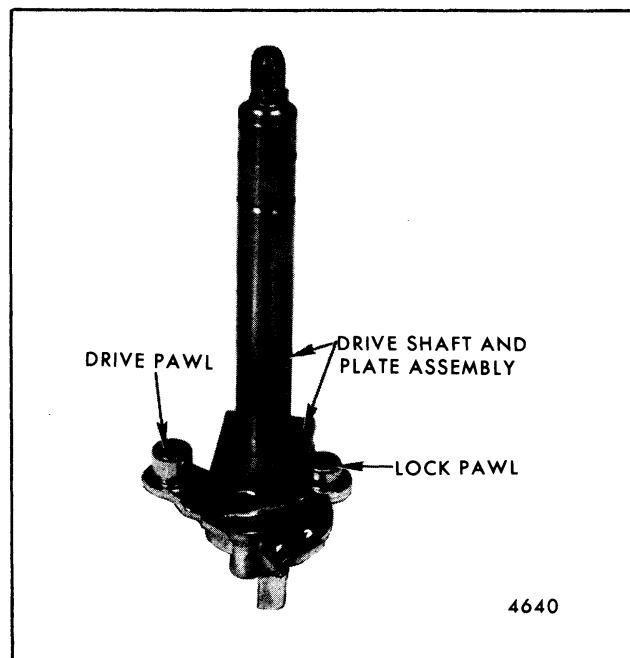


Fig. 2-47-Lock Pawl

2. Assemble lock pawl over drive pawl as shown in Figure 2-47.

3. Slide gear and tube over the drive shaft. (Move drive and lock pawls as required to allow their respective pins to fit in the gear guide channel.)

4. Holding the gear, manually rotate the drive plate in the direction of the arrow until the drive and lock pawl guide pins snap into their respective pockets in the gear (Fig. 2-48).

5. Reinstall coil spring between lock and drive pawls.

**NOTE:** Be very careful to maintain lock and drive pawl guide pins in their respective pockets during Step 6.

6. Assemble inner spacer washer over gearshaft and assemble gear mechanism in housing so that it is positioned with respect to the housing in the approximate location shown in Figure 2-45.

7. Reassemble the outer spacer washer, shield, shim washers, as required to obtain .004" (plus or minus .002") end play, snap ring and rubber seal cap in the order indicated. Refer to Figure 2-44.

8. Operate wiper to "park" position and install crankarm in the approximate position shown in Figure 2-49.

9. Install washer pump to wiper motor.

**NOTE:** Refer to "washer system" - round motor, assembly of washer pump to wiper motor.

## WIPER MOTOR ADJUSTMENTS

### Armature End Play

1. Loosen adjusting screw locknut (Fig. 2-49) and tighten or loosen the adjusting screw as required until end of screw barely touches end of armature.
2. Back off adjusting screw 1/4 turn and tighten locknut.

### Gear Assembly End Play

1. Add or remove shim washers as required to obtain .004" (plus or minus .002") end play (Fig. 2-44).

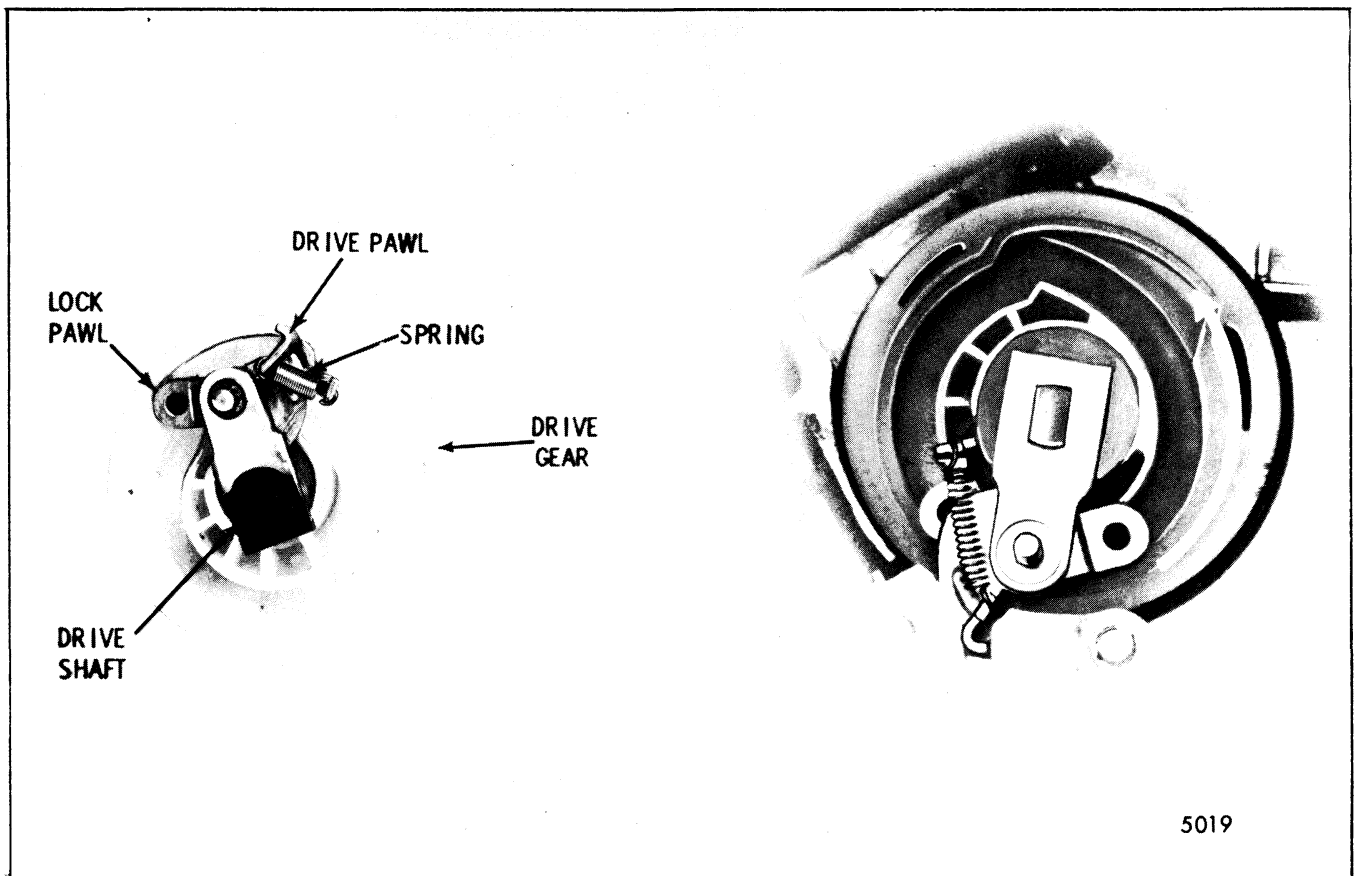


Fig. 2-48-Lock Pawl and Drive Pin Positioning

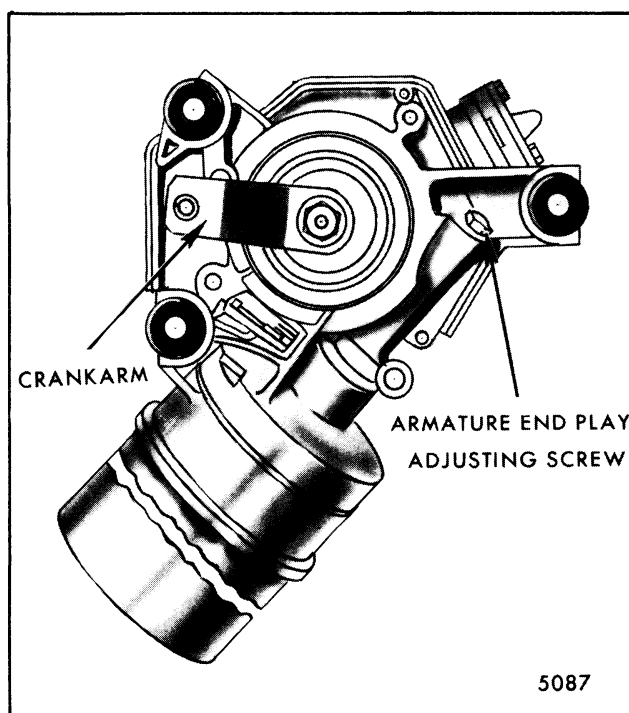


Fig. 2-49-Wiper Motor and Crank Arm in Park Position

SPECIFICATION CHART			
Operating Voltage	12 Volts D. C.		
Bench Check (No Load)	Current Draw (AMPS)		Crankarm Speed
	"F"	"A-B-C-D-E"	
"Lo" Speed . . . . .	5.0 Max.	6.0 Max.	35 - 50
"Hi" Speed . . . . .	4.0 Max.	4.5 Max.	70 - 90
Stall (Cold Motor)			
"Lo" Speed . . . . .	18.0 Max.	29.0 Max.	0
Torque	Inch Pounds		
Washer Pump Mounting Screws . . . . .	18		
Armature Adjusting Screw Jam Nut . . . . .	50		
Motor Tie Bolts . . . . .	30		
Gear Box Relay Attaching Screw . . . . .	30		
Motor Crankarm Attaching Nut . . . . .	100 - 130		
1/4 x 28 Thread . . . . .	300 - 350		
5/16 x 24 Thread . . . . .	25 - 35		
Motor Crankarm to Transmission Drive Link . . . . .	30 - 45		
Motor to Body Attaching Bolts . . . . .	48 - 72		
Transmission to Body Attaching Bolts . . . . .			
Lubrication			
Gear Teeth	Multifak EP-1 or Equivalent		
Gear Shaft			
Gear Camtrack			
Seal Cap (Inside)			
Armature Shaft			
Armature Worm			

Fig. 2-50-Specification Chart-Round Motor

## DEMAND WIPER SYSTEM

### DESCRIPTION

The wiper motor used with the demand wiper system is the same motor used for the depressed park system. However, this system requires the use of an extra relay (demand relay), a dual set of holding switches (Fig. 2-51) and an extra switch located in the in end of the shift lever. The shift lever switch is a two-position, button-type plunger. Depressing the switch button to the first detent provides "Demand Wiper" operation.

Weather conditions such as light rain, mist, fog, etc. that do not normally require continuous wiper operation cause the driver to continually reach down and turn the wiper control switch "ON" and "OFF". With the demand wiper system the driver merely depresses the shift lever button to the first detent position and releases it. The wipers will then make one complete wiping stroke and automatically shut "OFF". If the button is held in the first detent position, the wiper will operate until the button is released.

1. With the switch in the first detent position the coil circuits of the wiper gear box relay and the

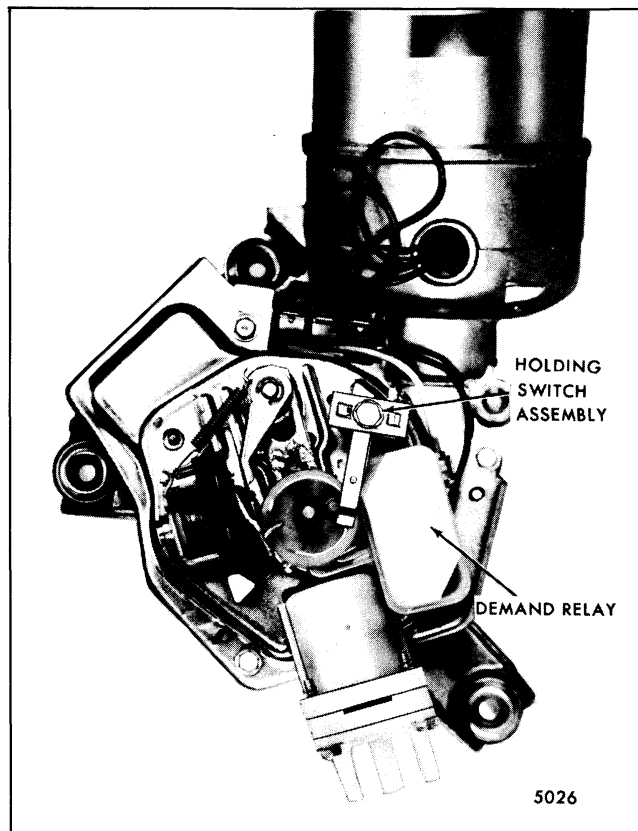


Fig. 2-51-Demand Wiper Assembly

demand relay are completed to ground simultaneously at the shift lever switch. Figure 2-52 shows wiper circuits in "OFF" position. Figure 2-53 shows the shift lever switch in the first detent position and the completed relay coil circuits.

2. With both relay coils energized, the gear box relay contacts close completing the feed circuit to the wiper motor windings and at the same time the demand relay contacts close completing a holding circuit to ground through the normally closed holding switch contacts "A" (Fig. 2-53).

**NOTE:** Without the holding circuit, quick release of the shift lever switch would cause the wiper blades to return to "park" before making a complete wiping stroke.

3. When the gear box relay switch contacts close, the wiper motor starts to run. The gear box relay coil will remain energized until the holding circuit is interrupted.

**NOTE:** The wiper motor operates in "LO" speed during this type of operation. The wiper motor shunt field circuit is completed directly to ground at the wiper control switch even though the switch is in the "OFF" position.

4. As soon as the wiper motor has run long enough to move the blades out of the park position and started the normal wiping stroke, the following occurs:

- a. The washer pump 4-lobe cam has a fin which opens holding switch contacts "A" when the cam is rotated (Fig. 2-54).

**NOTE:** The 4-lobe cam is connected to the wiper gear and anytime the gear is rotating the cam will also rotate. The holding switch contacts will open once during each revolution of the 4-lobe cam.

- b. When the fin momentarily opens the holding switch contacts "A", the holding circuit for both the gear box relay coil and demand relay coil is interrupted to ground. The demand relay switch contacts then opens and the gear box relay latch arm is released and moves out into the path of the gear drive pawl (Fig. 2-55). At this stage of operation the gear box relay switch is still closed and the wiper motor continues to run.

- c. The continuing rotation of the wiper gear and 4-lobe cam moves the fin away from the holding switch contacts "A" allowing them to close. Since the holding switch is in series with the demand relay switch which is now open, the holding circuit will remain open until the shift lever switch is again actuated.
- d. Further rotation of the wiper gear causes the gear drive pawl to engage the relay latch arm (Fig. 2-56). This action unlocks the output shaft from the gear. The output shaft extends

through the gear tube off center and as the gear continues to rotate, a cam action results. The cam action causes the gear drive pawl to push the latch arm into the relay housing where it pushes against and opens the relay switch (Fig. 2-57) shutting off the wiper.

## DIAGNOSIS CHART

Refer to preliminary inspection procedure and diagnosis chart in Programmed Washer System Section.

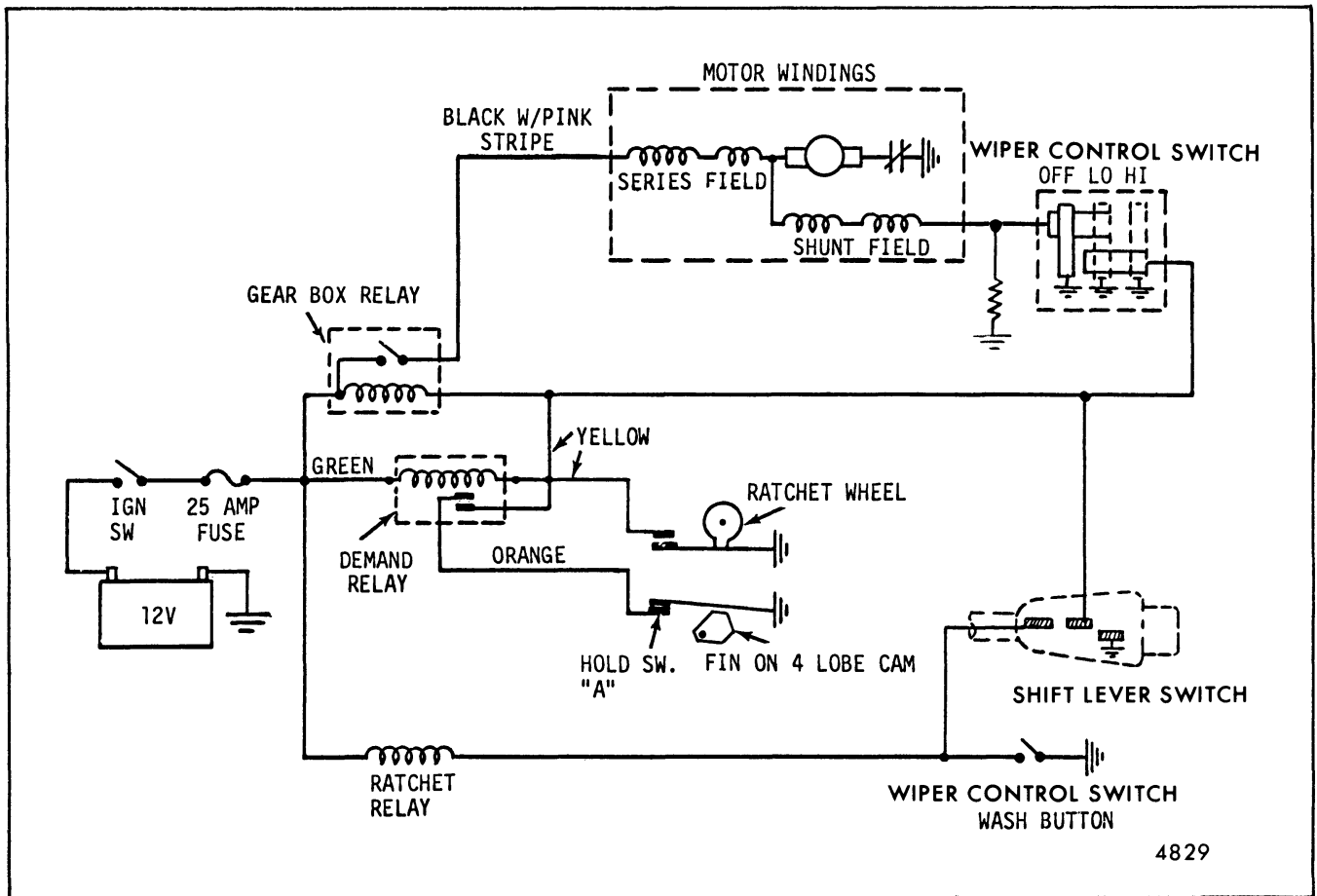


Fig. 2-52-Demand Wiper Circuits - Off Position



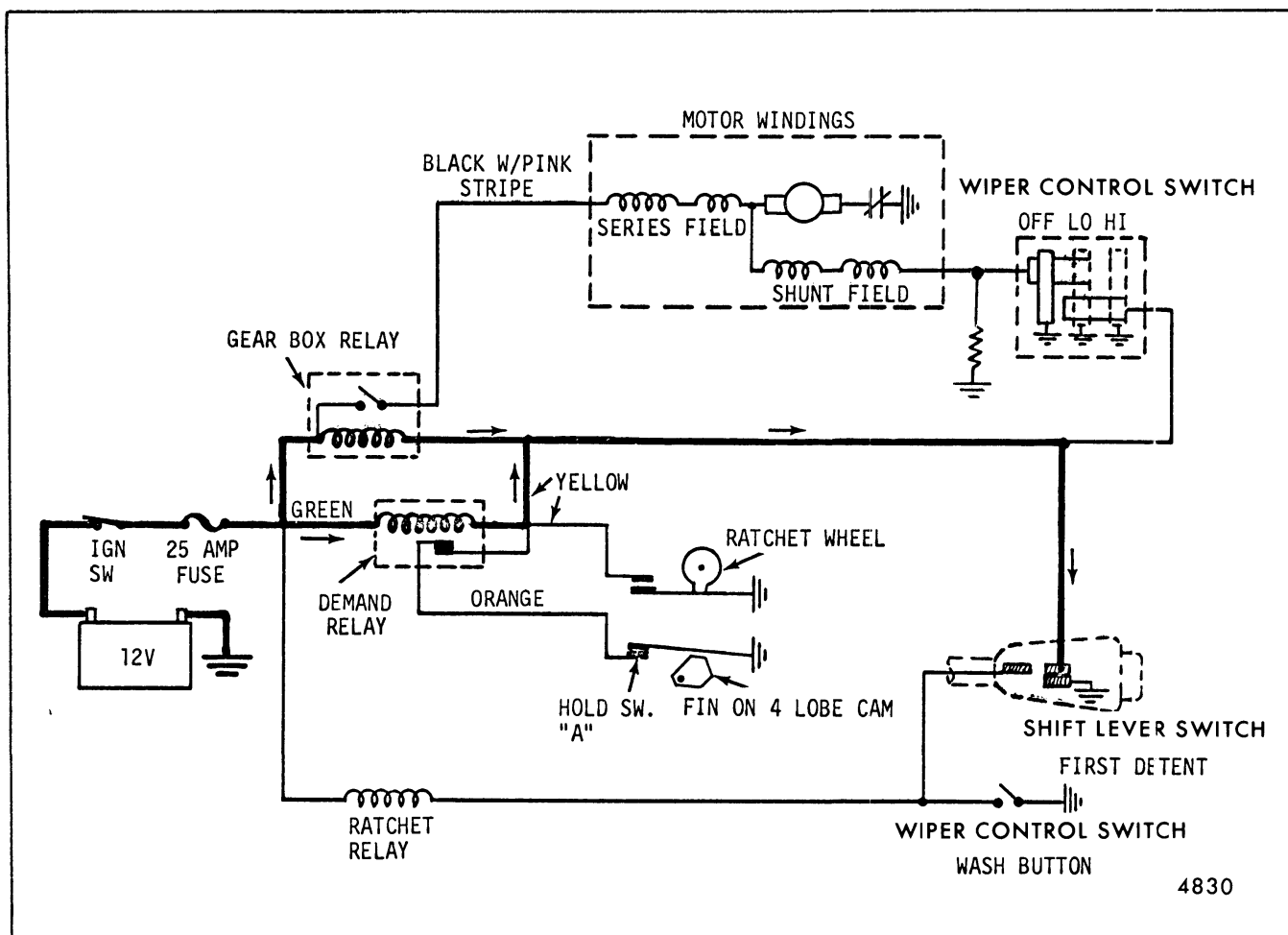


Fig. 2-53-Switch in First Detent Position

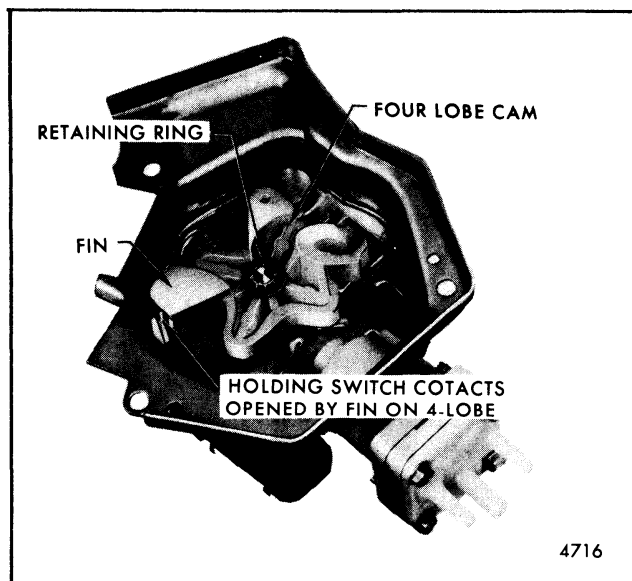


Fig. 2-54-Demand Washer 4-Lobe Cam

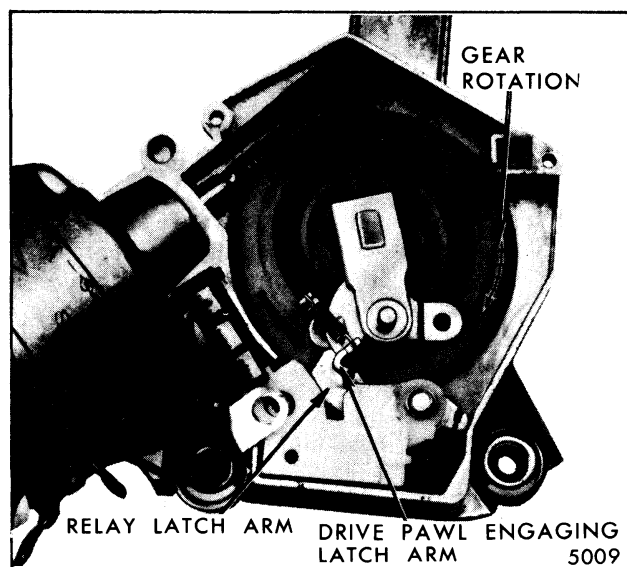


Fig. 2-56-Gear Drive Pawl Engaged

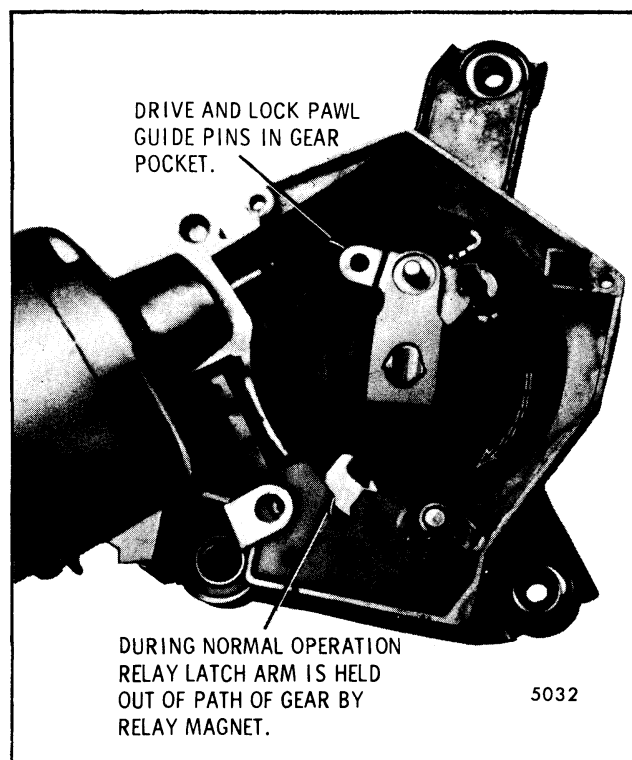


Fig. 2-55-Gear in Normal Run Position

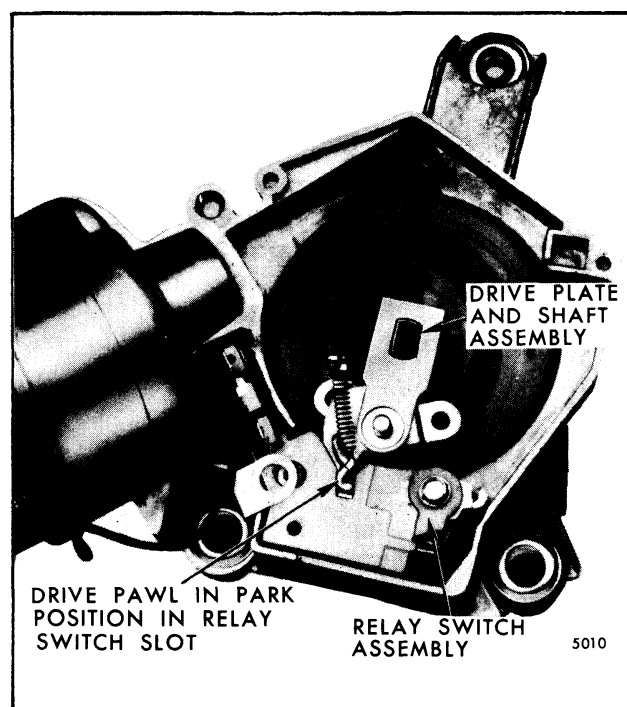


Fig. 2-57-Wiper Shut Off In Park Position

## WASHER SYSTEMS

### DESCRIPTION

The washer pump used on both the rectangular and round motor is a positive displacement type pump employing a small piston, spring and valve arrangement. The plastic valve assembly is identical for both, however the programming (starting and completion of wash cycle) which is accomplished electrically and mechanically by a relay assembly and ratchet wheel arrangement differs and will be explained separately.

### RECTANGULAR MOTOR WASHER SYSTEM

#### Description

A four lobe nylon cam assembled on the output shaft of the wiper motor powers the washer pump mechanism. The cam rotates whenever the motor is running.

When the pump is attached to the wiper motor, the four lobe cam actuates a spring loaded cam follower arm and pin assembly. Figure 2-58 has the pump tilted back to show the relationship of cam follower lower pin to four lobe cam.

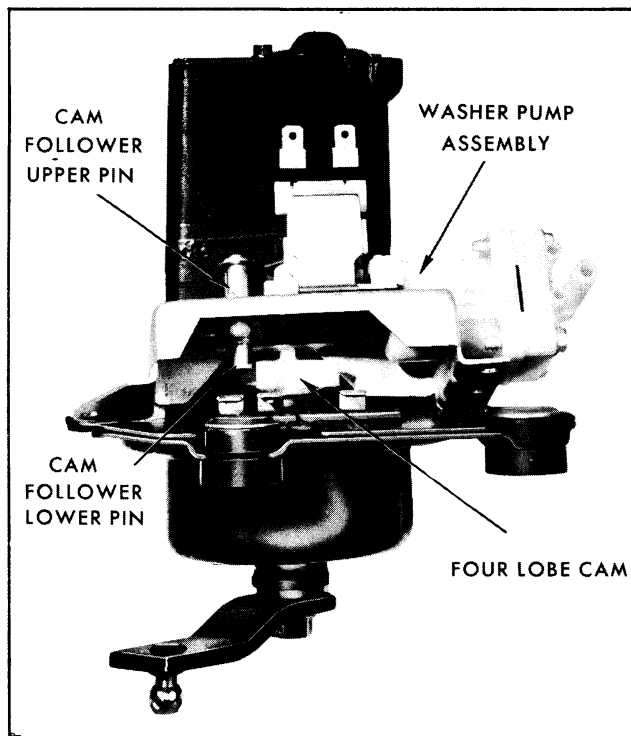


Fig. 2-58-Four Lobe Cam

The cam follower actually has two pins - an upper and lower. The lower or bottom pin is actuated by the four lobe cam. The upper pin, which extends through an elongated opening in the piston actuator plate has a ratchet pawl assembled on it (Fig. 2-59). Thus, whenever the wiper motor is running, the four lobe cam is rotating and in turn actuates the cam follower assembly. However, no pumping action occurs because the washer pump pumping mechanism is held in a "lock-out" position.

Referring to Figure 2-59, note that the piston actuator plate has a tang that is resting against a ramp on the lower surface of the ratchet wheel. This tang holds the spring loaded piston actuator plate in a retracted position. With the actuator plate held in a retracted position, the cam follower upper pin will merely move back and forth in the actuator plate elongated opening and no pumping action occurs. The ratchet pawl is held away from the ratchet wheel by a spring loaded solenoid plunger.

Depressing the control switch washer button completes the pump solenoid circuit to ground at the control switch and mechanically actuates the wiper switch to turn the wiper motor on (Fig. 2-60).

With the coil energized, the solenoid plunger is pulled toward the coil and this allows the ratchet pawl to engage the ratchet wheel teeth. (Keep in mind that the ratchet pawl moves back and forth when the wiper is on.) Thus when the ratchet pawl engages the ratchet wheel teeth, it will start to rotate the ratchet wheel. Each stroke of the ratchet pawl rotates the wheel one tooth.

The first stroke of the ratchet pawl rotates the

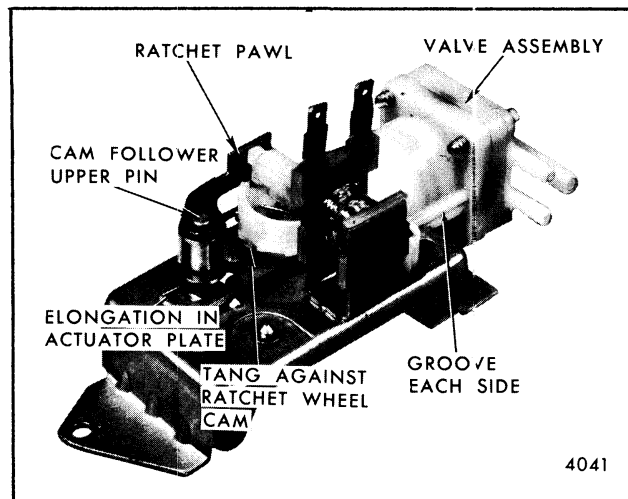


Fig. 2-59-Actuator Plate

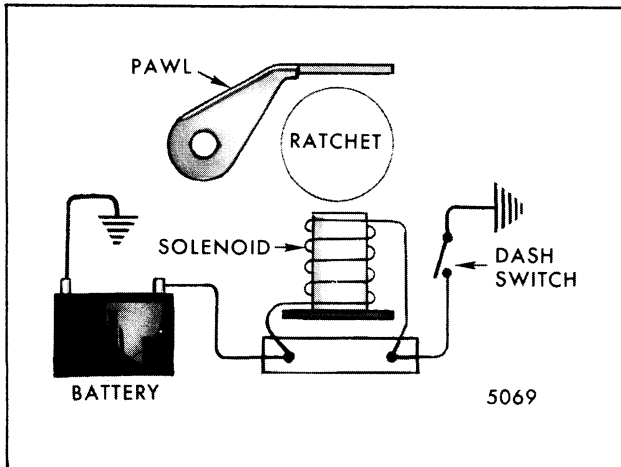


Fig. 2-60-Pump Wiring Circuit

ratchet wheel one tooth and accomplishes the following functions:

1. The "lock-out" ramp on the lower surface of the ratchet wheel is moved away from the tang on

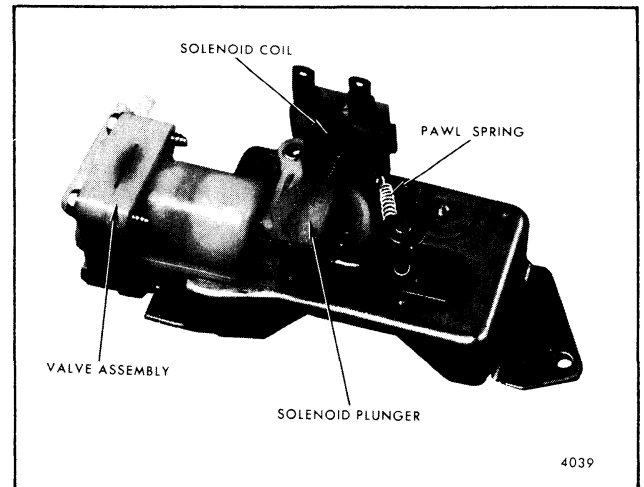


Fig. 2-62-Washer Assembly Internal Gear

the piston actuator plate releasing the pumping mechanism from the "lock-out" position.

When the piston actuator plate is released from the "lock-out" position the piston spring, which

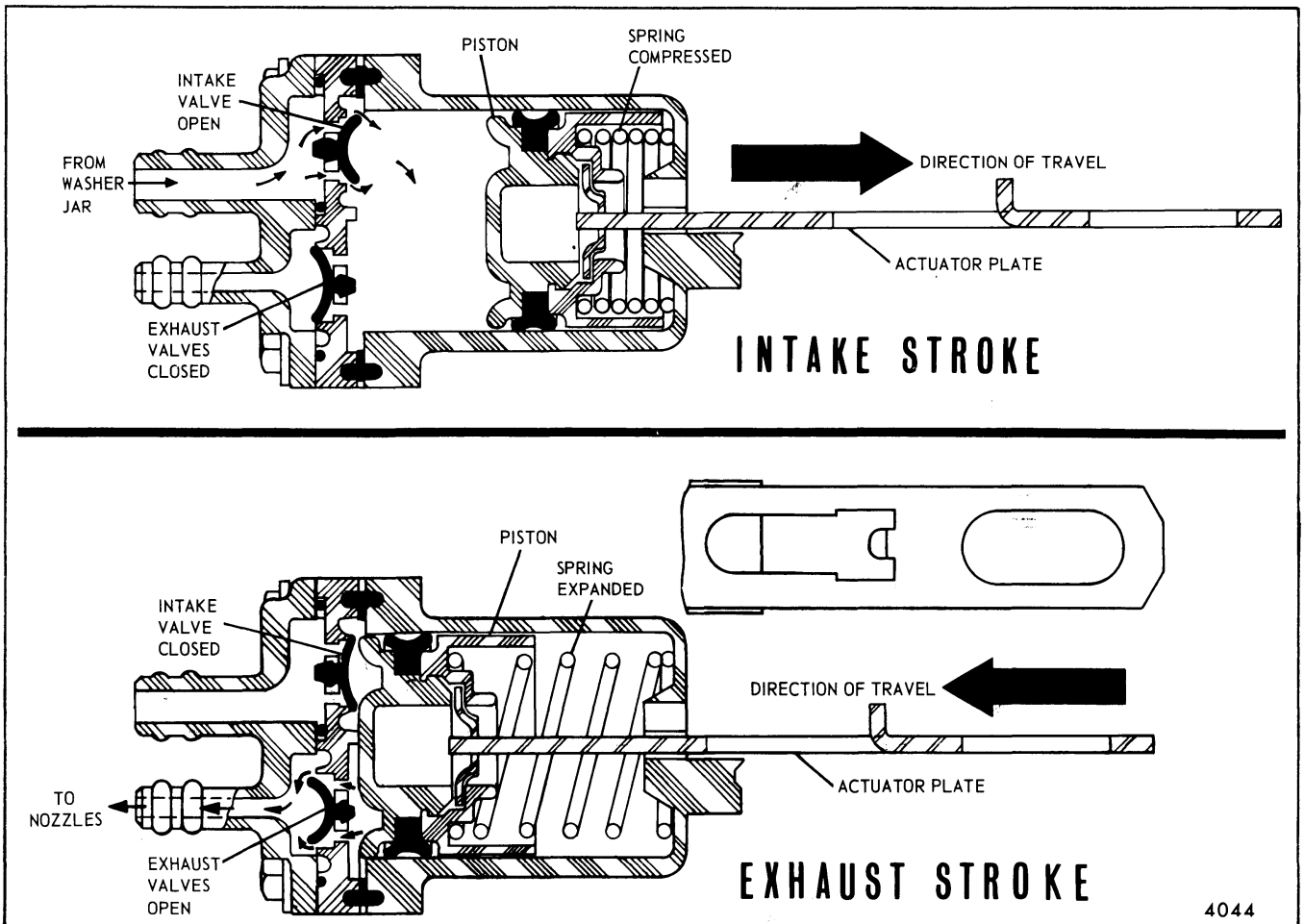


Fig. 2-61-Intake and Exhaust Stroke

had been held in a compressed position, expands pushing the piston toward the valve assembly resulting in the first exhaust stroke (Fig. 2-61). The movement of the piston toward the valve assembly also pulls the piston actuator plate in the same direction causing the back edge of the elongated opening in the actuator plate to move up tight against the upper cam follower pin.

2. Rotating the ratchet wheel one tooth from the lock-out position also maintains the solenoid plunger in the coil energized position. The plunger will be held in this position until the ratchet wheel has been rotated 360 degrees or 12 teeth.

The continuing rotation of the four lobe cam actuates the pumping mechanism as follows:

As each lobe actuates the follower, the cam follower in turn moves the piston actuator plate and piston away from the valve assembly compressing the piston spring. The movement of the piston away from the valve assembly creates a vacuum in the pump cylinder which draws the wash solution into the pump cylinder through the intake valve (Fig. 2-61).

As the high point of each lobe passes the cam follower lower pin, the piston spring is allowed to ex-

pand forcing the piston toward the valves. The movement of the piston toward the valves forces the wash solution out the two exhaust valves to the spray nozzles.

The intake and exhaust strokes occur four times for each revolution of the wiper motor output gear. During each intake stroke, the ratchet wheel is rotated one tooth.

The pumping operation is completed automatically when the ratchet wheel has been rotated through 360 degrees or 12 teeth.

After the ratchet wheel has been rotated through 12 teeth, two simultaneous functions are accomplished.

1. The spring loaded solenoid plunger pushes through an opening in the rim of the ratchet wheel. As the plunger moves through the opening, it pushes the ratchet pawl away from the ratchet teeth (Fig. 2-62).
2. The ramp on the lower surface of the ratchet wheel has moved to a position where it is holding the piston actuator plate in a lock-out position (Fig. 2-59).

#### DIAGNOSIS CHART - RECTANGULAR MOTOR WASHER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
1. Washer inoperative	<p>A. Inadequate quantity of washer solution</p> <p>B. Hoses damaged or loose</p> <p>C. Plugged screen at end of jar cover hose</p> <p>D. Loose electrical connection to washer pump or wiper switch</p> <p>E. Open circuit in feed wire to pump solenoid coil</p> <p>F. Wiper switch defective</p> <p>G. Pump solenoid coil defective</p>	<p>A. Add washer solution</p> <p>B. Cut short length off end of hose to insure air tight connection or replace hose</p> <p>C. Clean screen</p> <p>D. Check electrical connection and repair if necessary</p> <p>E. Locate open circuit and repair</p> <p>F. Replace wiper switch</p> <p>G. Replace solenoid</p>

## DIAGNOSIS CHART-RECTANGULAR MOTOR WASHER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
	H. Washer nozzles plugged I. Ratchet wheel tooth missing J. Ratchet pawl spring missing K. Defective pump valve assembly	H. Clean washer nozzles I. Replace ratchet wheel J. Replace ratchet pawl spring K. Replace pump valve assembly
2. Washer pumps continuously when wipers are operating	A. Grounded wire from pump solenoid to switch B. Wiper Switch Defective C. Ratchet wheel tooth missing D. Ratchet wheel dog broken or not contacting ratchet wheel teeth E. Lock-out tang broken or bent on piston actuator plate	A. Locate grounded wire and repair B. Replace wiper switch C. Replace ratchet wheel D. Replace or repair ratchet wheel dog E. Replace piston actuator plate

## WASHER DISASSEMBLY

## Solenoid Assembly - Ratchet Dog

1. Remove the ratchet dog retaining screw. Hold the spring loaded solenoid plunger in position and carefully lift the solenoid assembly and ratchet dog off the frame of the pump.
2. Separate the ratchet dog from solenoid mounting plate as required (Fig. 2-64).

## Ratchet Pawl

1. Disconnect ratchet pawl spring (see Fig. 2-66 for proper location of spring).
2. Remove ratchet pawl retaining ring and slide ratchet pawl off cam follower shaft.

## Ratchet Wheel

1. Follow step 1 under solenoid - ratchet dog assembly.
2. Move ratchet wheel spring out of shaft groove and slide ratchet wheel off its shaft (Fig. 2-65).

## Pump and Actuator Plate Assembly

1. Remove solenoid assembly - ratchet dog, ratchet pawl and ratchet wheel as outlined in their respective procedures.

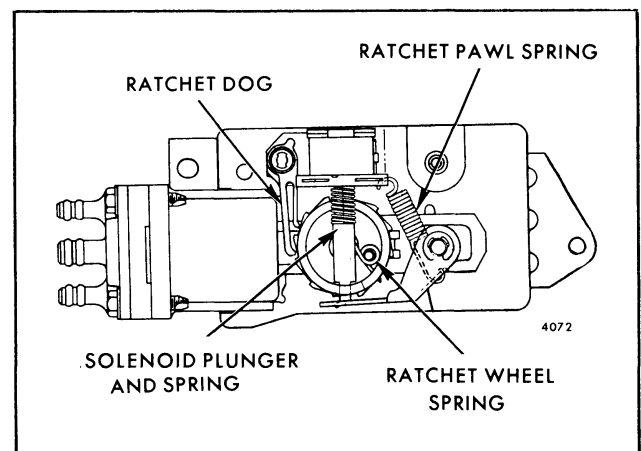


Fig. 2-63-Ratchet Pawl Spring Location

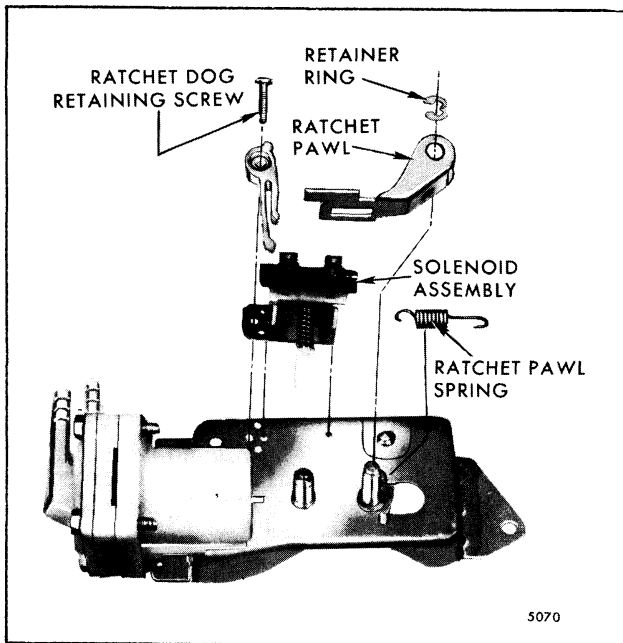


Fig. 2-64-Pump Assembly - Exploded View

2. To separate the pump and pump actuator plate from the frame, pull the pump housing in the direction toward the valve end until the grooves in the housing clear the frame. Then remove the actuator plate from the ratchet wheel and cam follower shafts.

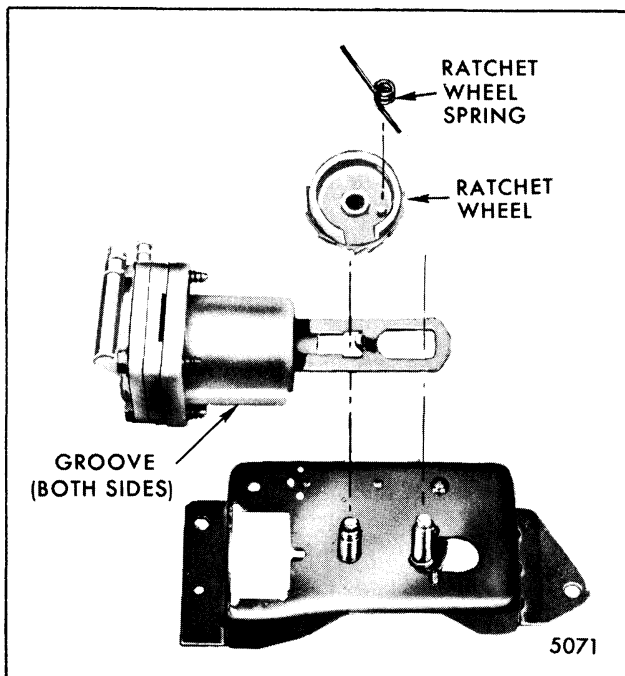


Fig. 2-65-Pump Ratchet Wheel

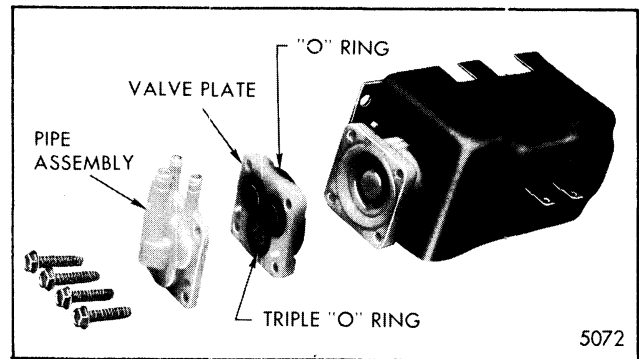


Fig. 2-66-Valve Assembly

### Valve Assembly

1. Remove the four (4) screws that attach the valve assembly to the pump housing.

**NOTE:** During reassembly be sure gasket between housing and valve plate is properly positioned in the housing and valve plate grooves. Also be sure triple O ring (Fig. 2-66) is properly installed between valve body and pipe assembly.

## ROUND MOTOR WASHER SYSTEM

### Description

The basic pumping mechanism consists of a spring-loaded piston assembly enclosed in a plastic cylinder. Attached to the piston and extending out of the cylinder housing is an actuator plate. A valve assembly consisting of two exhaust valves and one intake valve is attached to the opposite end of the cylinder housing and controls the flow of washer solution.

Referring to Figure 2-67, note that the elongated slot of the piston actuator plate fits over a pin. This pin

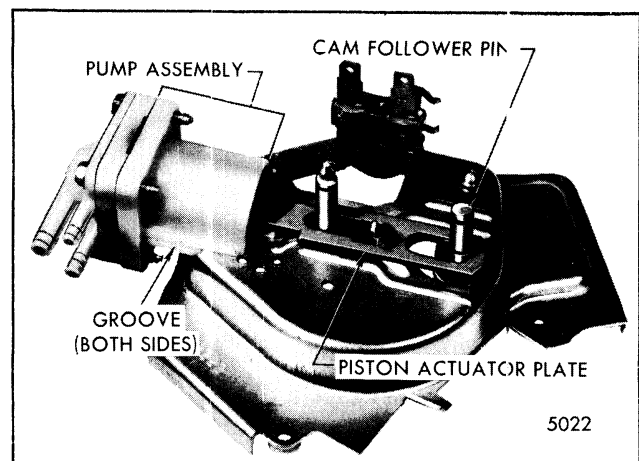


Fig. 2-67-Pump Intake Stroke

is a part of a cam follower assembly which is actuated by the 4-lobed cam located on the underside of the pump mounting plate. When the wiper is running, the drive gear rotates the 4-lobed cam which in turn causes the cam-follower to move back and forth.

When the cam-follower moves in the direction indicated by the arrow in Figure 2-67, the cam-follower pin, which extends thru the piston actuator plate, pulls the actuator plate away from the valve assembly compressing the piston spring. As the piston moves away from the valve assembly, a vacuum is created in the cylinder which opens the intake valve, drawing washer solution into the cylinder (Fig. 2-61).

As the 4-lobed cam continues to rotate, the cam-follower pin moves in the opposite direction described in the Intake Stroke. This permits the piston spring to expand which in turn pushes the piston toward the valve assembly creating pressure between the piston and valve assembly. This pressure "build-up" forces the washer solution out the two exhaust valves to the nozzles (Fig. 2-61).

**NOTE:** For purposes of explanation, only one exhaust valve opening is shown.

The intake and exhaust stroke cycle will occur four times for each revolution of the wiper drive gear while the washer pump is operating.

The programming section of the pump mechanism consists of a relay, ratchet pawl, ratchet wheel, and ratchet wheel dog (Fig. 2-68).

Refer to Figure 2-69 and note that a tang on the piston actuator plate is resting against a ramp on the lower surface of the ratchet wheel. This, in effect, holds the piston actuator plate in a lock-out position.

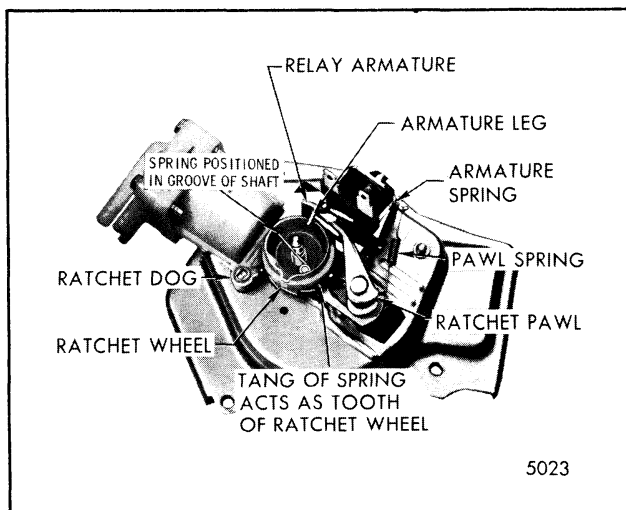


Fig. 2-68-Pump Mechanism

With actuator plate in this position and the wiper running, the cam-follower pin merely moves back and forth in the elongated slot of the piston actuator plate and no pumping action can occur.

The ratchet wheel, which, if rotated, would move the ramp away from the tang of the actuator plate releasing the pump action, is prevented from rotating as follows:

The relay assembly, consisting of a coil and armature, is constructed in such a way that the ratchet wheel pawl extends through an opening in the relay armature, preventing it from engaging the ratchet wheel teeth.

Actuating the washer button to obtain windshield washer pump operation starts the wiper motor and energizes the pump relay. When relay is energized, the relay armature is pulled suddenly toward the coil, allowing the ratchet wheel pawl to drop out of the relay armature opening and engage the teeth of the ratchet wheel.

The ratchet wheel pawl, which is actuated by the same cam-follower pin that moves the piston actuator plate, begins to rotate the ratchet wheel. Rotating the ratchet wheel one tooth moves the ratchet wheel ramp away from the tang of the piston actuator plate (Fig. 2-69), permitting the piston spring to expand which in turn forces the piston toward the valve assembly resulting in the first exhaust stroke. This sequence then repeats through the remaining cycles.

The pumping operation is terminated automatically when the ratchet wheel has rotated a full 360 degrees and the 12th cycle is completed. This is accomplished as follows.

As the ratchet wheel approaches the completion of its 360 degrees travel, two functions occur simultaneously:

1. A leg on the relay armature rides up a ramp located on the outer surface of the ratchet wheel. When the leg reaches the top of the ramp, it moves over the top edge of the ratchet wheel. This action allows the ratchet wheel pawl to re-enter the armature opening preventing further rotation of the ratchet wheel until the next time the relay coil is energized from the washer button. (Refer to Fig. 2-68 for position of armature leg while pump is idling.)
2. The tang on the piston actuator plate is resting once more against the ramp on the lower side of the ratchet wheel (Fig. 2-69).



## DIAGNOSIS CHART - ROUND MOTOR WASHER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
1. Washers inoperative	<p>A. Inadequate quantity of washer solution</p> <p>B. Hoses damaged or loose</p> <p>C. Plugged screen at end of jar cover hose</p> <p>D. Loose electrical connection to washer pump or wiper switch</p> <p>E. Open circuit in feed wire to ratchet relay coil</p> <p>F. Wiper switch defective</p> <p>G. Ratchet relay coil defective</p> <p>H. Washer nozzles plugged</p> <p>I. Ratchet wheel tooth missing</p> <p>J. Ratchet pawl spring missing</p> <p>K. Defective pump valve assembly</p>	<p>A. Add washer solution</p> <p>B. Cut short length off end of hose to insure air tight connection or replace hose</p> <p>C. Clean screen</p> <p>D. Check electrical connections and repair if necessary</p> <p>E. Locate open circuit and repair</p> <p>F. Replace wiper switch</p> <p>G. Replace ratchet relay</p> <p>H. Clean washer nozzles</p> <p>I. Replace ratchet wheel</p> <p>J. Replace ratchet pawl spring</p> <p>K. Replace pump valve assembly</p>
2. Washer pumps continuously when wipers are operating	<p>A. Grounded wire from ratchet relay to switch</p> <p>B. Wiper switch defective</p> <p>C. Ratchet wheel tooth missing</p> <p>D. Ratchet wheel dog broken or not contacting ratchet wheel teeth</p> <p>E. Lock-out tang broken or bent on piston actuator plate</p>	<p>A. Locate grounded wire and repair</p> <p>B. Replace wiper switch</p> <p>C. Replace ratchet wheel</p> <p>D. Replace or repair ratchet wheel dog</p> <p>E. Replace piston actuator plate</p>

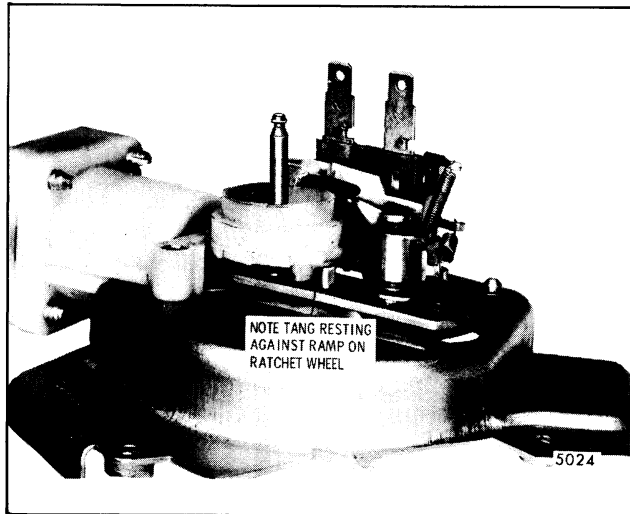


Fig. 2-69-Ratchet Wheel-Ramp

## REMOVAL OF WASHER PUMP FROM WIPER MOTOR

1. Remove washer hoses from pump.
2. Disconnect wires from pump relay.
3. Remove plastic pump cover.
4. Remove attaching screws securing pump frame to motor gear box and remove pump and frame.

## WASHER DISASSEMBLY

### Ratchet Dog

1. Remove attaching screw and lift ratchet dog off mounting plate.

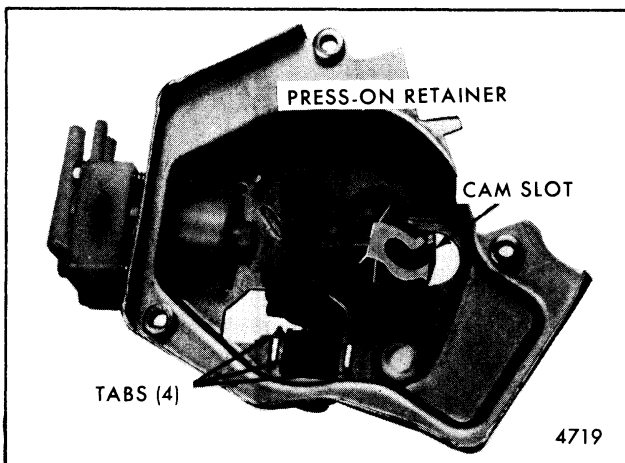


Fig. 2-70-Removing Four Lobe Cam

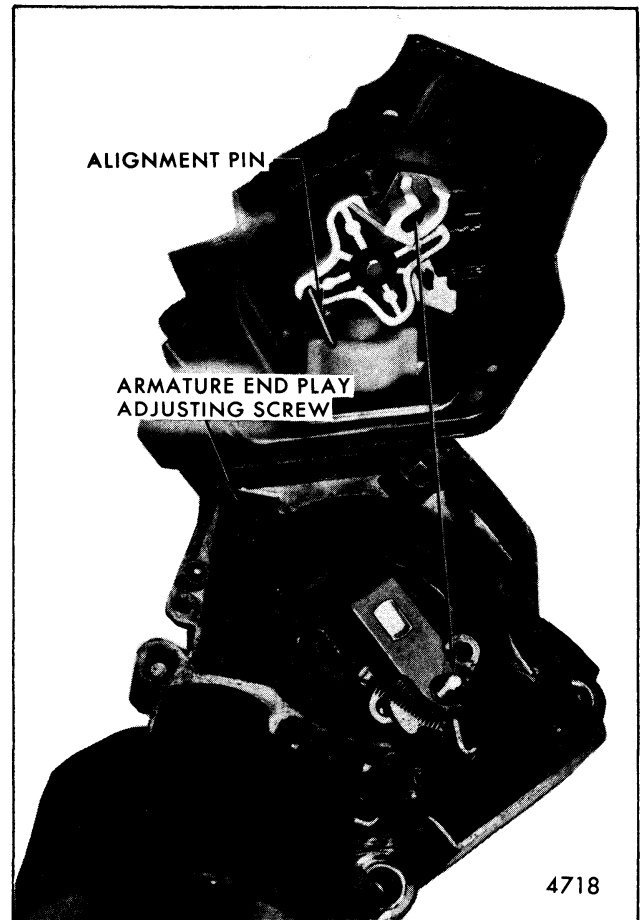


Fig. 2-71-Installing Washer to Pump

### Ratchet Pawl and Pawl Spring

1. Disengage pawl spring from pawl and slide pawl off cam- follower pin.

### Ratchet Wheel

1. Remove plastic pump cover.
2. Pry ratchet spring out of slot in shaft, hold relay armature against relay coil and slide ratchet wheel off shaft.

**CAUTION:** When reassembling ratchet wheel be careful not to damage ratchet dog.

### Four-Lobe Cam

1. Remove the push-on retainer and slide cam off shaft (Fig. 2-70).

### Relay-Terminal Board Assembly

1. Remove 4-lobe cam.

2. Remove ratchet pawl and pawl spring.
3. Remove relay armature and spring.
4. Chisel off the four bent-over tabs that secure the coil mounting bracket to the base (Fig. 2-70). Remove relay coil and terminal board assembly. To mount a replacement relay assembly, hold it securely against the base mounting surface and bend locking tabs over.

**CAUTION:** Be careful not to damage coil winding or terminals.

5. To check the pump programming mechanism, manually rotate the 4-lobe cam through complete 12-tooth cycle (360 degrees) and observe if pump is operating as previously explained.

### Pump Assembly

1. Remove ratchet wheel, ratchet wheel dog, ratchet pawl and spring.
2. To release the plastic pump housing from the sheet-metal base, pull it in the direction toward the valve end until the grooves in the housing clear the base. Next, detach the assembly from the cam-follower pin (Fig. 2-67).

**NOTE:** The piston and plastic housing is serviced as a complete assembly.

### Valve Assembly

1. Note position of valve assembly relative to the pump housing for reassembly then remove four screws that secure valve assembly to housing.
2. Remove housing-to-valve-body gasket and save for reassembly.

### Assembly of Washer Pump to Wiper Motor

**NOTE:** Wiper motor gear must be in PARK position (Fig. 2-71) to assemble pump to wiper motor.

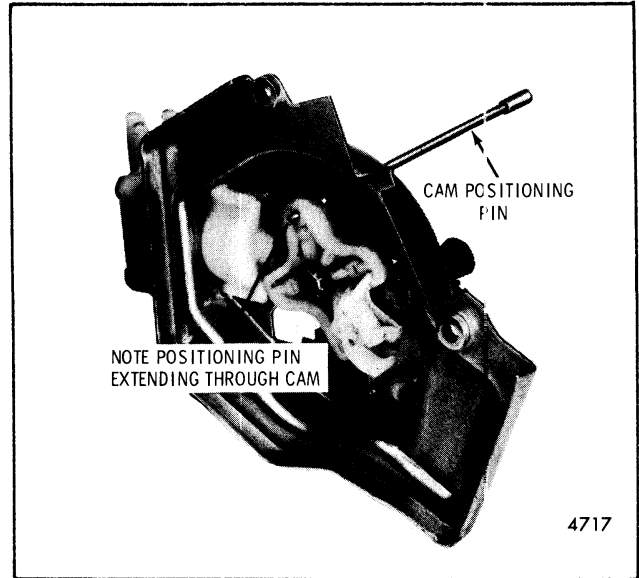


Fig. 2-72-Cam Alignment Pin Installation

1. Remove plastic pump cover.
  2. Rotate the 4-lobe cam until index hole (.125" dia.) in the cam is aligned with the hole in the pump mounting plate. Insert a pin through both holes to maintain cam in position (Fig. 2-72).
  3. Position pump on wiper so that slot in 4-lobe cam fits over the gear drive pin (Fig. 2-71). Secure pump to gear housing and remove locator pin, temporarily connect wiring connector.
  4. Turn on wiper and washer pump to check pump operation.
- NOTE:** A loud knocking noise would indicate that the pump cam has not engaged the drive pin properly.
5. Install pump cover.

## PROGRAMMED WASHER SYSTEM

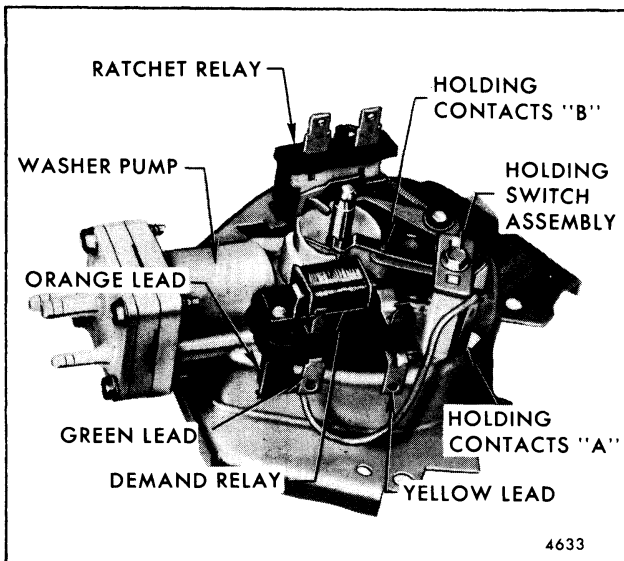
### DESCRIPTION

The programmed washer system (Fig. 2-73) is used in conjunction with the demand wiper system and provides a fully automatic windshield washer cycle of operation as follows:

1. The shift lever switch is depressed to the second detent position to start the cycle of operation and is immediately released.

2. Wiper motor and washer pump start to operate.
3. Washer pump operates through a pumping cycle and stops pumping but the motor continues to operate.
4. The wiper motor provides two additional drying wipes and then automatically shuts off.

**NOTE:** If the wiper control switch washer button

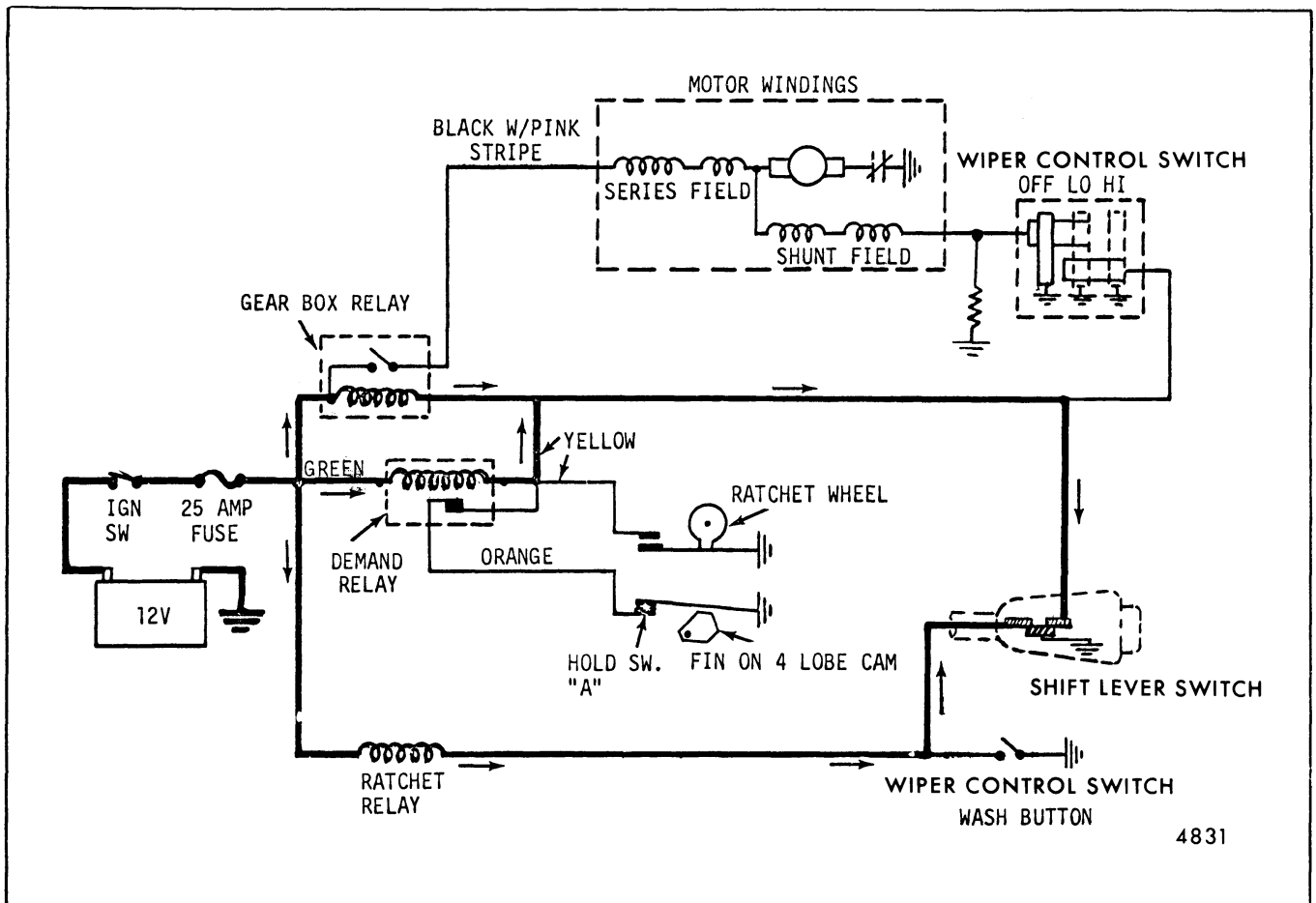


**Fig. 2-73-Washer Assembly**

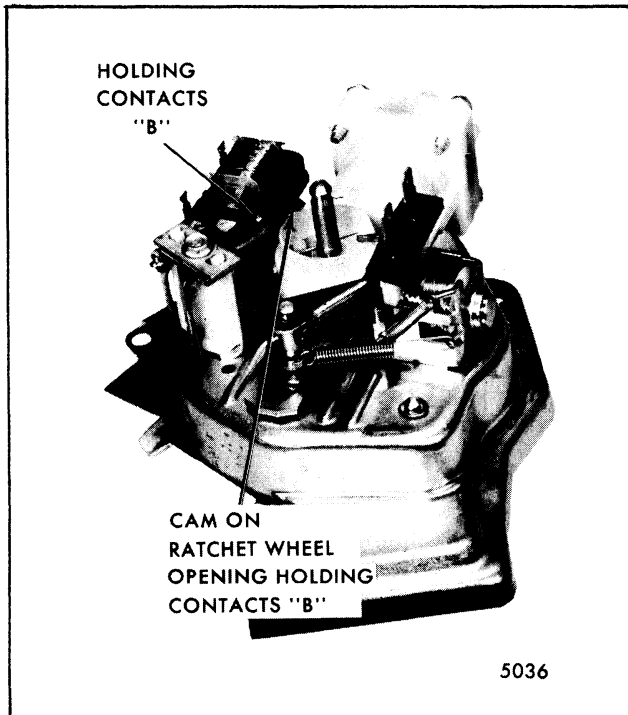
is used to provide a wash cycle, it is necessary to move the control switch to the "OFF" position to shut off the wipers after the wash cycle is completed.

Pushing the shift lever switch to the second detent position and then releasing it immediately starts a cycle of operations as follows:

1. Three relay coil circuits (gear box relay, demand relay and pump ratchet relay) are completed to ground at the shift lever switch momentarily (Fig. 2-74).
2. With the three relay coils energized, the following completed circuits result almost simultaneously.
  - a. The gear box relay switch contacts close completing the feed circuit to the wiper motor windings and the motor starts operating.
  - b. The washer pump demand relay switch contacts close completing a holding circuit to ground through holding switch contacts "A". This holding circuit is required to maintain the ground circuit for both the gear box relay and the washer pump demand relay coils when the shift lever switch is released.
  - c. Momentarily energizing the washer pump ratchet relay coil releases the washer pump



**Fig. 2-74-Shift Lever Switch in Second Detent Position**



mechanism from its "lock-out" or idling position and the pump starts to operate. The holding circuit is not required for this relay.

- When the washer pump is released from its "lock-out" or idling position, the pump ratchet wheel starts to rotate. With the pump in the idling position, a cam on the ratchet wheel keeps holding contacts "B" open (Fig. 2-75). However, when the pump starts and the ratchet wheel is rotated one tooth, holding switch contacts "B" close providing an alternate ground for both the gear box relay coil and the washer pump demand relay coil (Fig. 2-76). The alternate ground circuit through switch contacts "B" is required because contacts "A" are opened once for every revolution of the washer pump 4-lobe cam (Fig. 2-79). Without the alternate circuit, the washer pump demand relay coil circuit would open when contacts "A" open causing the demand relay switch to open which in turn would open the gear box relay coil circuit to ground. This would cause the wiper motor to park the blades and automatically shut off after one wiping stroke.

Fig. 2-75-Pump in Idling Position

**NOTE:** Holding contacts "B" will remain closed

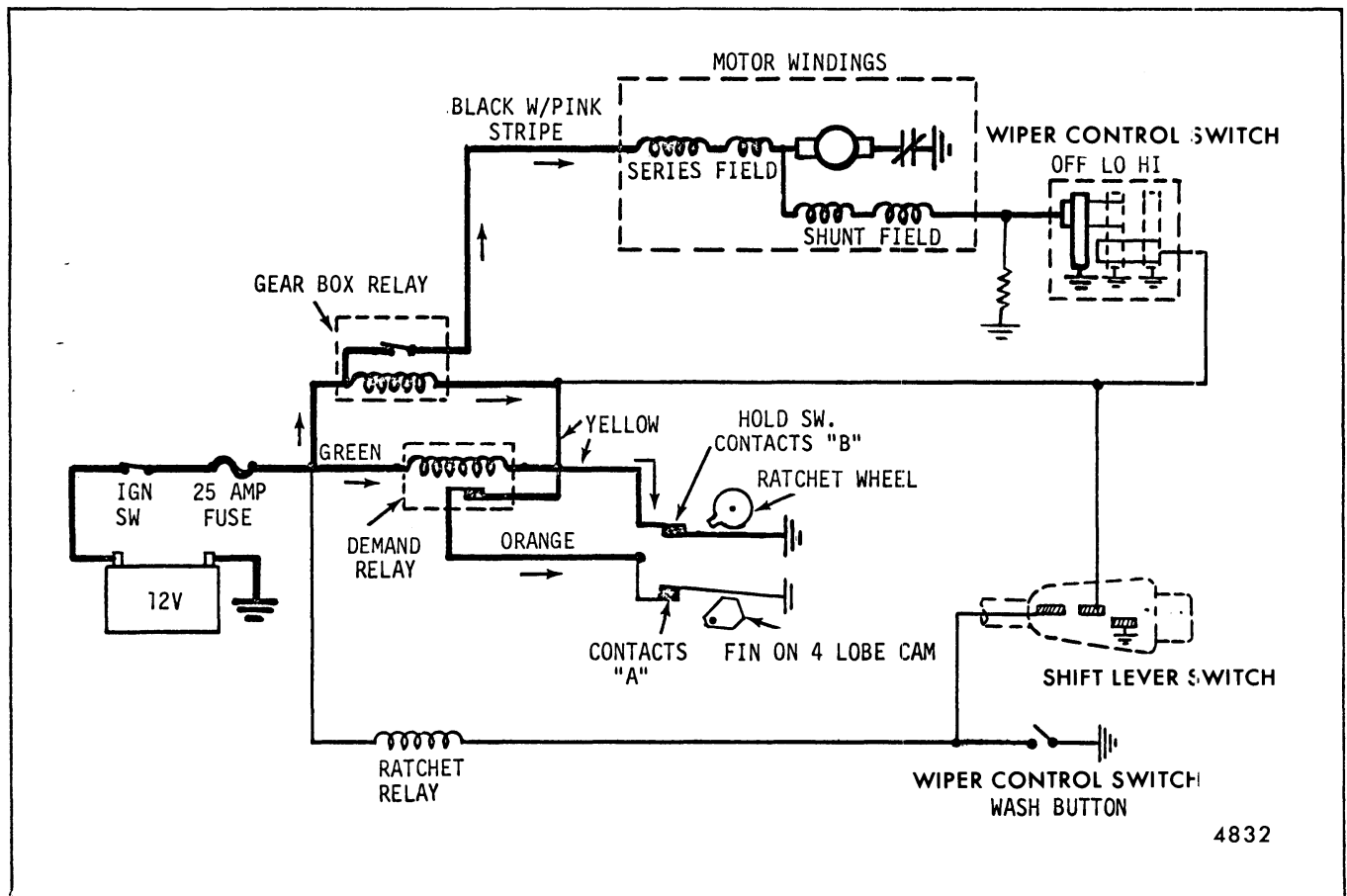


Fig. 2-76-Holding Circuit for Washer

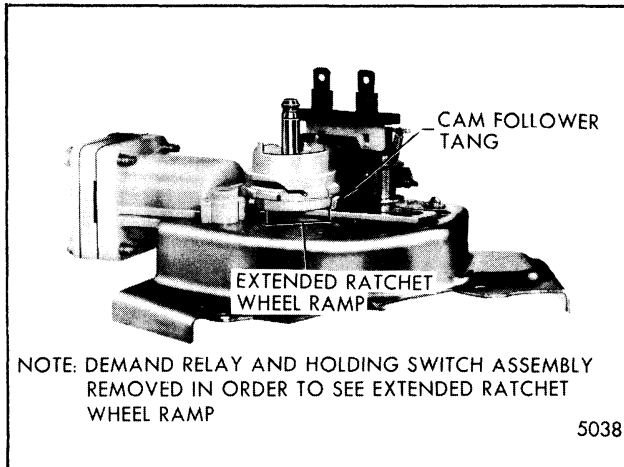


Fig. 2-77-Ratchet Wheel Ramp

until the washer pump ratchet wheel has been rotated 360 degrees.

4. The washing cycle is completed when an extended ramp on the lower surface of the ratchet wheel moves into position where the tang on the piston actuator plate rests on the ramp stopping the movement of the actuator plate (Fig. 2-77). However, the wiper motor continues to run to provide two additional drying wiperes.

The additional wiperes are accomplished as follows: Although the pump has discontinued pumping, the pump ratchet wheel has not completed its 360 degree rotation and holding contacts "B" are still closed maintaining the gear box and demand relay coil circuits to ground which in turn maintains the feed circuit to the wiper motor windings.

During the two wiping strokes, the ratchet wheel continues to rotate.

5. Automatic "shut off" of the wiper is completed when the washer pump ratchet wheel has been rotated 360 degrees and the "shut off" occurs as follows:

- a. The pump ratchet relay armature moves into a position that prevents the ratchet pawl from engaging the ratchet wheel teeth (pawl extends through window in the armature). This action prevents further ratchet wheel rotation.
- b. The cam on the edge of the ratchet wheel opens holding contacts "B" (Fig. 2-78). However, contacts "A" are still closed at this stage of operation. With contacts "A" still closed, the gear box relay coil is still energized completing the feed circuit to the motor windings, and the motor continues to run.

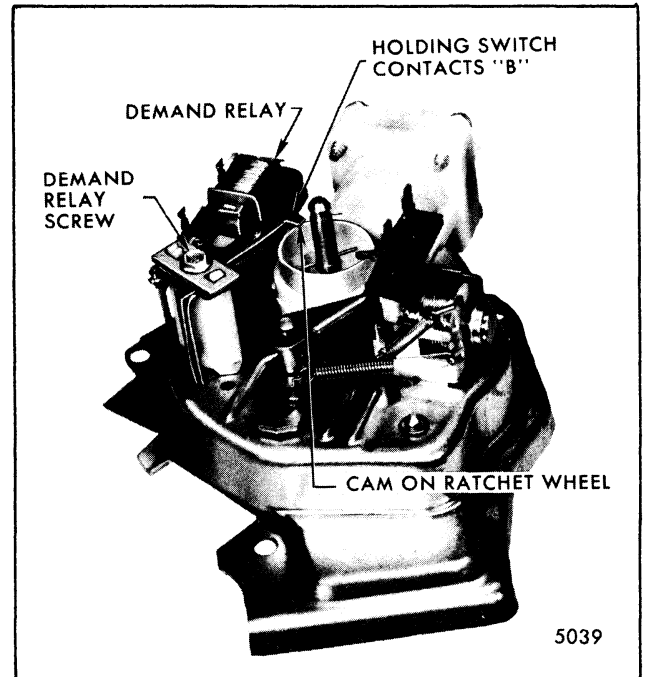


Fig. 2-78-Ratchet Wheel Cam

**NOTE:** The washer pump 4-lobe cam rotates in unison with the wiper gear.

- c. Next, the fin on the washer pump 4-lobe cam opens holding contacts "A". This interrupts the ground circuit for both the gear box and washer pump demand relay coils. The demand relay switch contacts then open and the relay coil circuits will remain open until the shift lever switch is again used. At this stage of operation the gear box relay latch arm

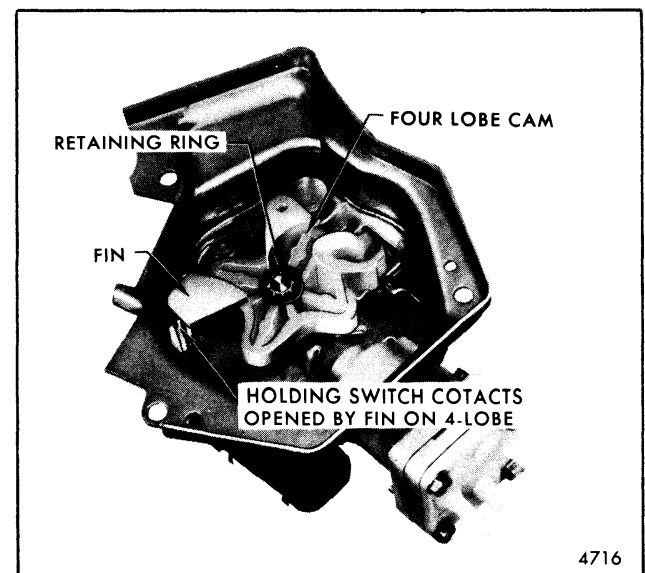


Fig. 2-79-Four Lobe Cam

moves out into the path of the gear drive pawl. However, the gear box relay switch contacts remain closed and the motor continues to run.

- d. The continuing operation of the wiper motor causes the gear drive pawl to engage the relay latch arm. When the pawl engages the latch arm, the clutch mechanism disengages the gear from the output shaft.
- e. The output shaft extends through the gear tube off center and the continuing rotation of the gear results in a cam action. This cam action causes the gear assembly drive pawl to push the relay latch arm into the relay housing. When the latch arm is pushed into the housing far enough it opens the switch contacts shutting off the wiper motor.

### DIAGNOSIS - WIPER MOTOR ON CAR

**NOTE:** To duplicate the various types of operation independently of the car wiring and wiper control and shift lever switches refer to Figures 2-80 and 2-81.

### Preliminary Inspection

1. Car wiring securely connected to wiper motor and/or switches.
2. Wiper motor securely grounded.
3. With ignition switch "ON", there is 12v at center terminal of wiper motor.
4. Wiper control and shift lever switches are securely grounded.

### Preliminary Operational Checks to Determine Type of Trouble

1. Check regular operation of wipers using wiper control switch. Check operation in all speeds and determine if wipers shut off correctly.

If wipers operate correctly - proceed to step 2. If wipers do not operate correctly - proceed to step 4.

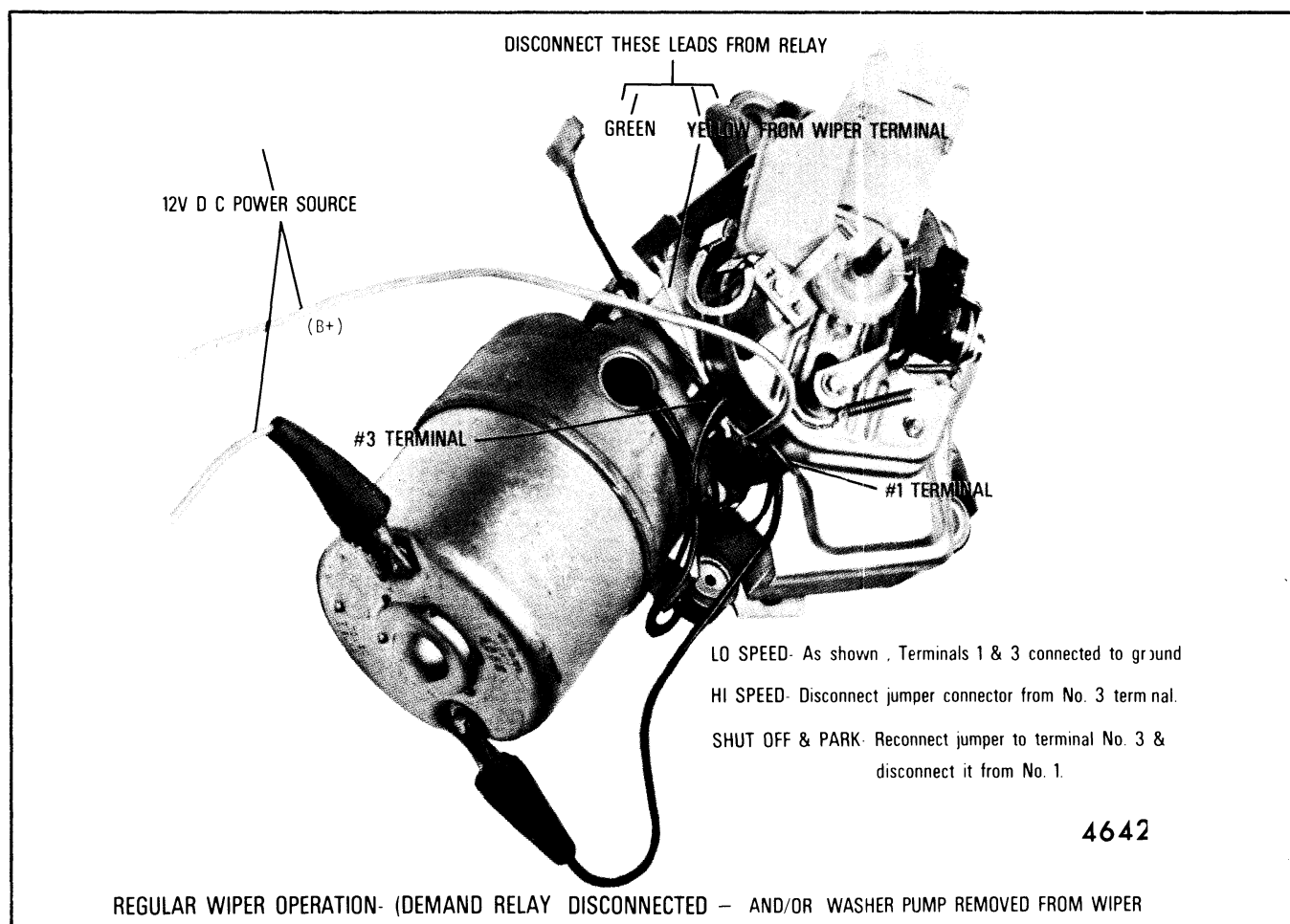


Fig. 2-80-Wiper Operation

NOTE: WIPER - WASHER SHOULD START, COMPLETE A WASH CYCLE AND AUTOMATICALLY SHUT OFF. (WIPER SHOULD OPERATE IN "LO" SPEED)

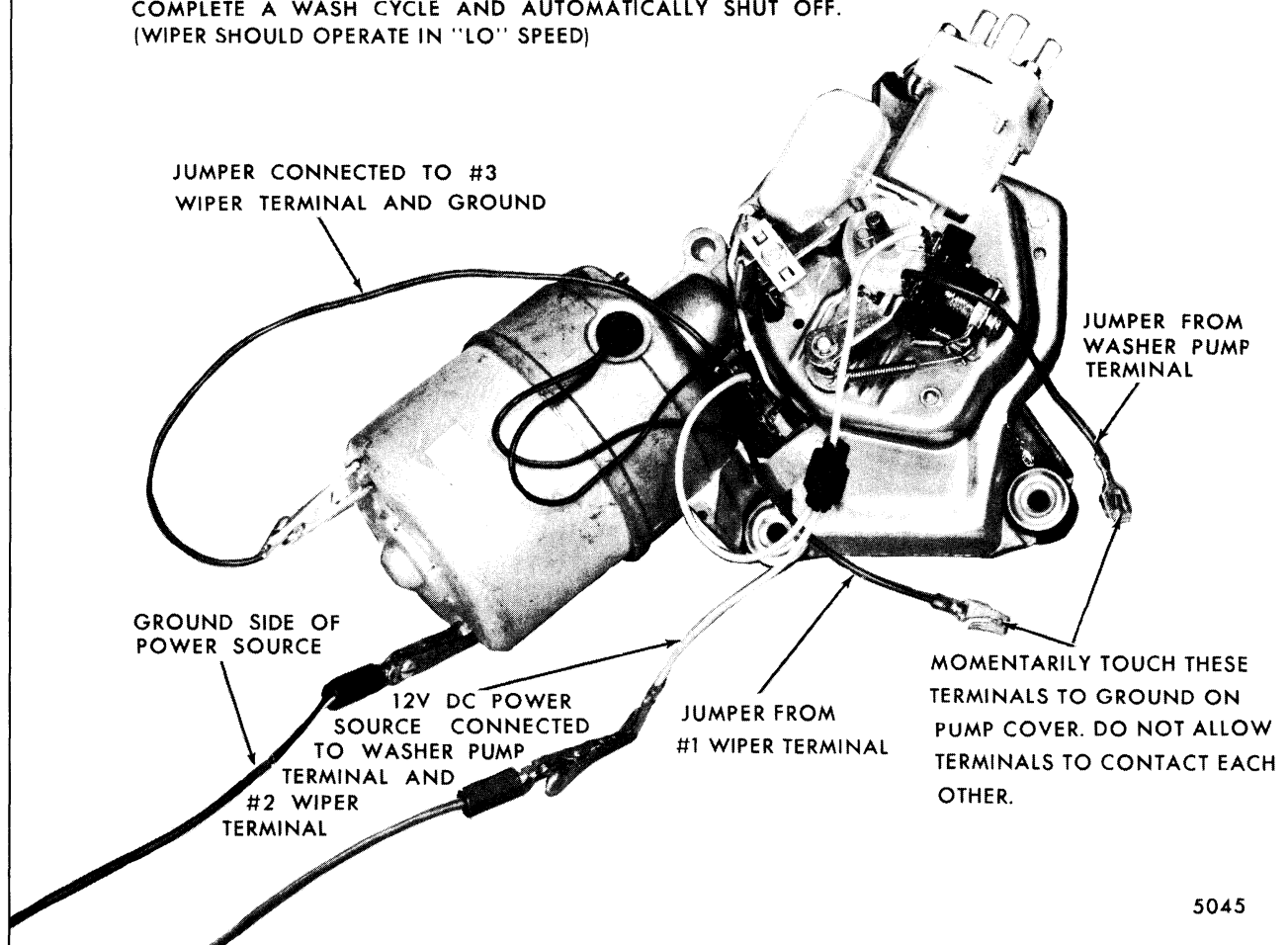


Fig. 2-81-Wiper - Washer Operational Check

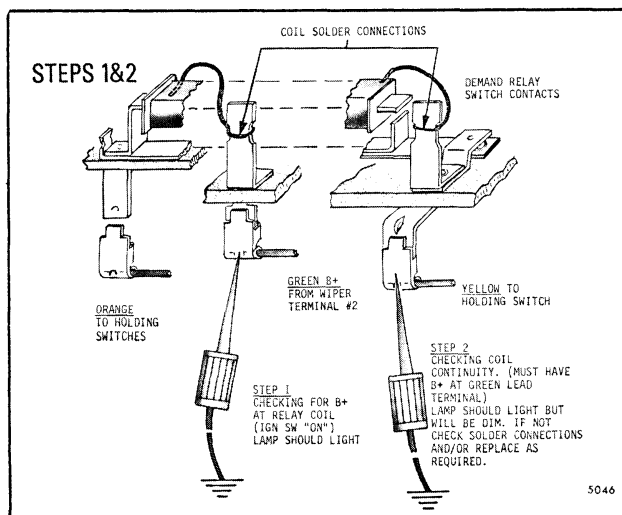


Fig. 2-82-Checking Procedure

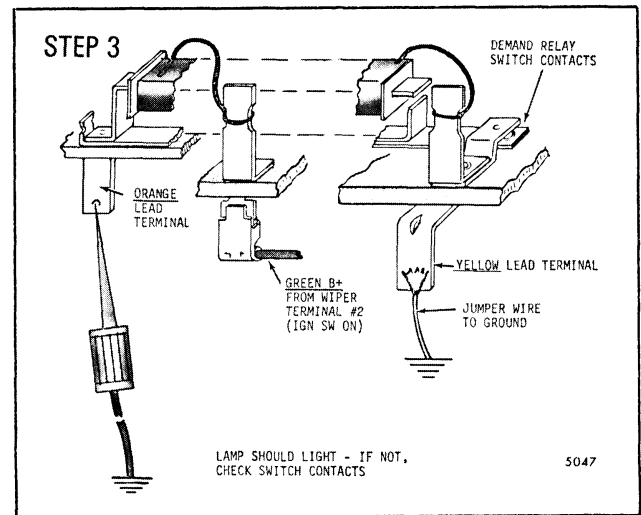


Fig. 2-83-Checking Procedure



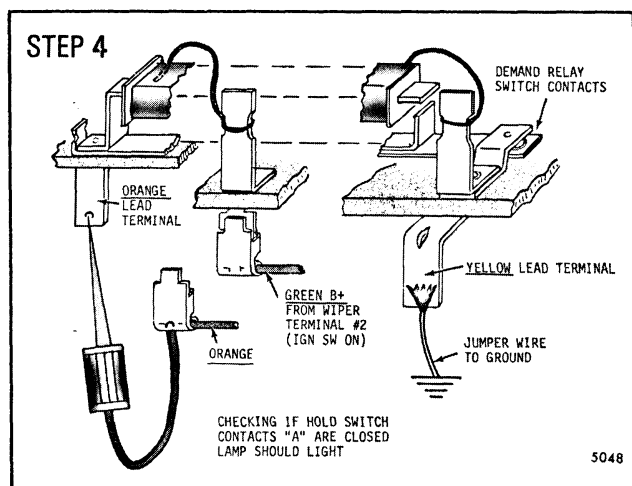


Fig. 2-84-Checking Procedure

## 2. Demand Wiper Operation:

- To check Demand Wiper operation, momentarily depress the shift lever switch to the first detent position. The wiper should operate, making one complete wiping stroke and then automatically shut off.
- If the wipers operate correctly - proceed to step 3.
- If the wipers do not operate correctly - proceed to step 4.

## 3. Programmed Washer Operation:

- Momentarily depress shift lever switch to second detent position. The wipers and washer pump should operate with the pump delivering one cycle of pumping strokes and shutting off. The wipers should make two wiping strokes after the pumping action stops, and then automatically shut off.
- If the wipers and washer pump still do not operate correctly, proceed to step 4.

## 4. Quick check to determine if trouble is in washer pump programming mechanism:

- Remove washer pump cover and disconnect green lead from demand relay terminal and yellow lead from holding switch terminal.

**NOTE:** Be sure lead terminals do not touch wiper metal.

- Connect wiring to washer pump and using the control switch re-check wiper operation as described in step 1.

If the wipers operate correctly, the trouble is located in the washer pump programming mechanism (demand relay and/or holding switches). See Figures 2-82, 2-83 and 2-84.

If the wipers and/or washer pump do not operate correctly, refer to the Diagnosis Chart and select the condition that matches the existing trouble.

## DIAGNOSIS CHART - DEMAND WIPER AND PROGRAMMED WASHER

Unless otherwise indicated, most of the following diagnosis procedures may be performed with the wipers installed on car.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper motor operates correctly with wiper control switch but will not start when shift lever switch is used in either detent position.	<p>A. Shift lever switch ground connection loose.</p> <p>B. Light blue wire to shift lever switch open.</p> <p>C. Shift lever switch defective.</p>	<p>A. Check shift lever switch ground connection.</p> <p>B. Check harness connectors-Shift lever switch to wiper control switch.</p> <p>C. Disconnect lt. blue wire from shift lever switch and momentarily touch it to ground. If wiper operates correctly, trouble is in shift lever switch.</p>

DIAGNOSIS CHART-DEMAND WIPER AND PROGRAMMED WASHER

CONDITION	APPARENT CAUSE	CORRECTION
2. Wiper inoperative when either the wiper control or shift lever switches are used.	<p>A. Fuse blown.</p> <p>B. Lt. blue wire from wiper terminal No. 1 open.</p> <p>C. Wiper linkage locked or binding. Disconnect transmission drive link from wiper motor crank arm and check operation by observing motor crank arm.</p>	<p>A. Check for 12v at center terminal of wiper motor. If no voltage, check fuse or open circuit in feed wire.</p> <p>B. Connect wiper terminal No. 1 to ground, and leave harness connector attached to wiper terminals. If wiper operates, check car wiring connectors, wiper control switch connections to locate open circuit in light blue wire.</p> <p>C. Operate wiper independently of car wiring and wiper control or shift lever switches (Fig. 2-81).</p> <p>If wiper operates correctly, recheck fuse and lt. blue wire.</p> <p>If wiper motor is still inoperative, remove motor and refer to Diagnosis Chart - Wiper Off Car (round motor)</p>
3. Wiper operates correctly with wiper control switch but when shift lever switch is depressed to the first detent and released quickly, the wiper blades start out of the park position but quickly return to park without making a complete wiping stroke.	<p>A. Demand relay coil open</p> <p>B. Demand relay switch contacts dirty or not closing.</p> <p>C. Holding contacts "A" not closing.</p> <p>D. Yellow and/or orange leads not connected to demand relay or poor solder connections.</p>	<p>A. Refer to Figure 2-82 for checking procedure.</p> <p>B. Refer to Figure 2-82 for checking procedure.</p> <p>C. Refer to Figure 2-83 for checking procedure.</p> <p>D. Refer to Figure 2-84 for checking procedure.</p>

CONDITION	APPARENT CAUSE	CORRECTION
<p>4. Wipers will not shut off. Blades operate through normal wipe pattern.</p>	<p>A. Holding switch contacts "A" or "B" (Fig. 2-73) not opening.</p>	<p>A. Turn ignition switch "OFF" then back "ON". If wipers shut off, the trouble is in the holding switch contacts. Repair or adjust holding switch as required. If wipers don't shut off, proceed to following step.</p>
	<p>B. Wire between wiper terminal No. 1 and wiper control switch or shift lever switch grounded.</p>	<p>B. Remove washer pump cover and disconnect green lead from demand relay terminal and yellow lead from holding switch terminal. Be sure the lead terminals do not touch wiper metal. Re-connect car wiring to washer pump and using wiper control switch re-check wiper operation through all speeds and park.</p> <p>If the wipers shut off recheck holding switches and/or a grounded yellow or orange demand relay lead.</p> <p>If the wipers do not shut off, proceed to step C below.</p>
	<p>C. Defective wiper control or shift lever switch.</p>	<p>C. Remove light blue wire from connector that plugs on wiper terminals and re-install connector on wiper terminals.</p> <p>If the wipers shut off, locate grounded condition in light blue wire.</p>
	<p>D. Wiper gear box relay coil grounded.</p>	<p>D. If the wipers did not shut off in step C, the wiper motor gear box relay coil is grounded or the red lead between the coil and wiper terminal No. 1 is grounded.</p>

CONDITION	APPARENT CAUSE	CORRECTION
<p>5. Wipers won't shut off. Blades move up and down approximately 15 degrees in and out of park position and wipers have "HI" speed only.</p>	<p>A. Wiper motor defective. Shunt field open.</p> <p>B. Wire between wiper terminal No. 3 and wiper control switch open.</p> <p>C. Wiper control switch defective.</p>	<p>A. To eliminate wiper motor leave harness connector on wiper terminals and connect terminal No. 3 to ground.</p> <p>If the wiper motor then has "LO" speed and shuts "OFF", the trouble is in the car wiring or wiper control switch. Proceed to steps B and C.</p> <p>If the wiper motor still has "HI" speed only and will not shut off, remove the motor and refer to Diagnosis Chart - Wiper Off Car (round motor).</p> <p>B. Check for loose harness connectors and/or wiper control switch connections.</p> <p>C. Remove harness from wiper control switch. Ground the black and light blue wire terminals to start motor, then disconnect the light blue lead from ground.</p> <p>If the wiper motor runs in "LO" speed and shuts off, the wiper control switch is defective.</p> <p>If the wiper motor still has "HI" speed only and recycles, there is an open in the black wire.</p>
<p>6. Washer pump pumps continually when wiper motor is "ON". Wiper motor operates normally otherwise.</p>	<p>A. Dark blue wire between washer pump and control switches grounded.</p>	<p>A. Disconnect harness connector from washer pump terminals. If the washer stops pumping, the trouble is in the wiring or wiper control switch.</p> <p>If the washer continues to pump, proceed to step C.</p>

CONDITION	APPARENT CAUSE	CORRECTION
	<p>B. Defective wiper control switch.</p> <p>C. Washer pump defective. Washer pump ratchet wheel not being rotated by ratchet pawl.</p>	<p>B. Connect harness to pump and disconnect dark blue wire from wiper control switch. Turn motor "ON".</p> <p>If washer pump shuts "OFF", trouble is in wiper control switch.</p> <p>If washer keeps pumping, proceed to step C.</p> <p>C. Remove washer pump cover and connect wiring to wiper control switch and pump. Observe if ratchet wheel is rotating while pump is operating.</p> <p>If ratchet wheel is not rotating, check for a sheared tooth on ratchet wheel. Check for broken ratchet wheel dog or dog not engaging ratchet wheel teeth. Repair or replace parts as required.</p>
7. Wipers have "HI" speed only.	A. See item 5	A. See item 5
8. Wipers have "Lo" speed only and shut off correctly.	<p>A. Defective wiper control switch.</p> <p>B. Black wire from wiper terminal No. 3 to wiper control switch is grounded.</p> <p>C. Wiper motor defective.</p>	<p>A. Remove solid black wire from connector that plugs on wiper terminals.</p> <p>B. If wipers have "HI" speed after step A, locate ground in black wire or replace wiper control switch as required.</p> <p>C. If wipers still have "LO" speed only after step A, remove wiper motor and refer to Diagnosis Chart-Wiper Off Car (round motor).</p>

9. Intermittent operation with wiper control switch "ON".	<p>A. Loose wiper ground strap.</p> <p>B. Wiper control switch loose.</p> <p>C. Loose wiring connection.</p> <p>D. Defective wiper motor.</p>	<p>A. Check ground strap for secure ground.</p> <p>B. Check switch mounting for looseness and secure ground.</p> <p>C. Check all wiring connections for proper engagement.</p> <p>D. Remove motor and refer to Diagnosis Chart-Wiper Off Car (round motor).</p>

## REMOVAL OF WASHER PUMP FROM WIPER MOTOR

1. Remove washer hoses from pump.
2. Disconnect wiring from pump relay.
3. Remove plastic pump cover.
4. Disconnect yellow wire from holding switch and green wire from demand relay.
5. Remove attaching screws securing pump frame to motor gear box and remove pump and frame.

6. Remove retaining ring and slide ratchet pawl off the cam follower pin.
7. Pull pump housing out until housing grooves clear the mounting surfaces; then lift the pump off the ratchet wheel shaft and cam follower pin (Fig. 2-86).
8. Carefully chisel off the four bent over tabs that secure the coil mounting bracket to the base.
9. Remove the coil and terminal board assembly.

**NOTE:** To mount the replacement relay assembly, hold it securely against the mounting surface and bend the four tabs over.

## WASHER DISASSEMBLY

1. Remove retaining ring and slide 4-lobe cam off shaft (Fig. 2-79).
2. Remove holding switch retaining screw and lift the holding switch assembly and demand relay assembly off the pump mounting surface (Fig. 2-78). Separate relay assembly from holding switch.
3. Remove ratchet dog retaining screw and lift dog off the mounting surface.
4. Remove ratchet relay armature spring, ratchet pawl spring and remove ratchet relay armature (Fig. 2-85).
5. Move leg of ratchet wheel spring out of the groove in the shaft and slide ratchet wheel and spring off the shaft.

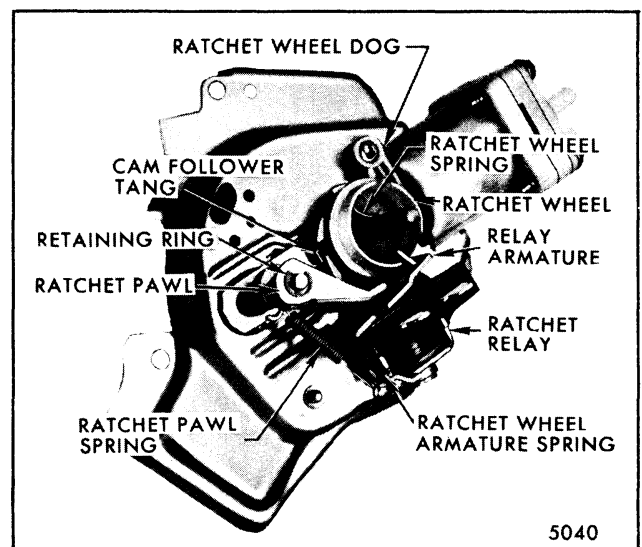


Fig. 2-85-Pump Assembly

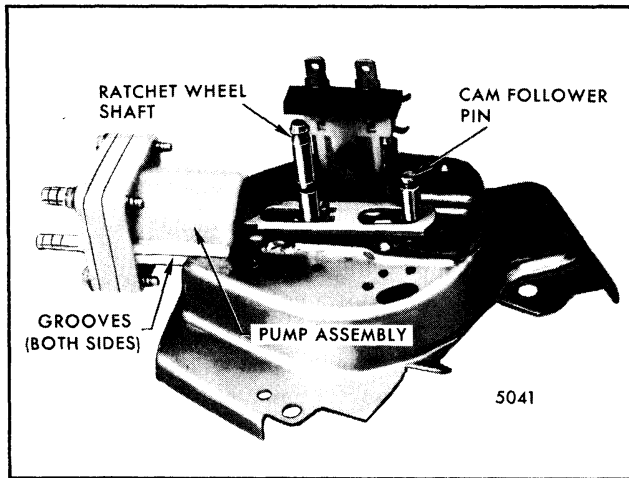


Fig. 2-86-Pump Assembly

10. Note position of valve assembly relative to the pump housing for reassembly purposes, then remove the 4 screws that secure the valve ports to the pump housing.

**NOTE:** Save housing to valve body gasket for reassembly.

## WASHER ASSEMBLY

1. Install pump over ratchet wheel shaft and cam follower pin with the tang on pump actuator plate facing up.
2. Align grooves in pump housing with mounting surface then release pump housing.
3. Move leg of ratchet wheel spring and install ratchet wheel on shaft.
4. Move pump actuator plate tang away and push ratchet wheel down until spring locks in groove of the shaft.
5. Install ratchet pawl over pin and install retaining ring.
6. If washer relay coil was removed for replacement, install new washer relay coil on base and bend tabs to securely hold relay coil in position.
7. Install relay armature.
8. Install relay armature spring.
9. Install ratchet pawl spring.
10. Install ratchet wheel dog and screw.

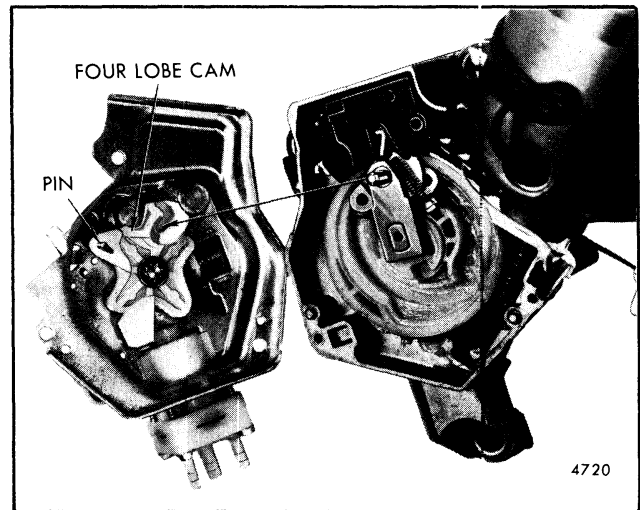


Fig. 2-87-Aligning Pump to Motor

11. Position holding switch on demand relay and install unit on pump base with retaining screw.

**NOTE:** Align the two plastic guide pins with holes in pump mounting plate.

12. Connect wire connector to outboard connector (one nearest to pump outlets).
13. Position 4-lobe cam over shaft and install retainer ring.

**NOTE:** Wiper motor must be in "PARK" position to assemble pump to wiper motor.

14. Rotate the 4-lobe cam so the index hole is aligned with the hole in the pump mounting plate. Insert a .120" to .125" diameter pin through both holes so the drive slot in the cam will be in the proper position for the drive pin (Fig. 2-87).

**NOTE:** Make sure the pump is in the free wheeling position before installing the pin.

15. Position pump on wiper so that the slot in the 4-lobe cam fits over the gear drive pin.
16. Install the three attaching screws and remove locator pin installed in step 14.
17. Connect wiring connectors to demand relay.
18. Install cover on washer pump.

## SECTION 3

# UNDERBODY

### INDEX

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## UNDERBODY ALIGNMENT - "F and X" Bodies

### GENERAL BODY CONSTRUCTION

The "F and X" series bodies are of unitized construction. A stub frame supports the front end sheet metal, front suspension, engine and other mechanical components. Unitized construction demands that underbody components be properly aligned to assure correct suspension location. In the event of collision damage, it is important that the underbody be thoroughly checked and, if necessary, realigned in order to accurately establish proper dimensions.

Since each individual underbody component contributes directly to the over-all strength of the body, it is essential that proper welding, sealing and rust-proofing techniques be observed during service operations. Underbody components should be rust-proofed whenever body repair operations, which destroy or damage the original rust-proofing, are completed. When rust-proofing critical underbody components, it is essential that a good quality type of air dry primer be used (such as corrosion resistant zinc chromate or equivalent material). It is not advisable to use combination type primer-surfacers.

There are many classifications of tools that may be employed to correct the average collision damage situation including frame straightening machines, lighter external pulling equipment and standard body jacks.

### ALIGNMENT CHECKING

An accurate method of determining the alignment of the underbody utilizes a measuring tram gage. The

tram gage required to perform all recommended measuring checks properly must be capable of extending to a length of 90 inches. At least one of the vertical pointers must be capable of a maximum reach of 18 inches.

Dimensional checks indicated in the upper portion of Figure 3-1 and 3-3 are calculated on a horizontal plane parallel to the plane of the underbody. Precision measurements can be made only if the tram gage is also parallel to the plane of the underbody. This can be controlled by setting the vertical pointers on the tram gage according to the dimensional checks shown in the lower portion of Figure 3-1 and 3-3. For actual dimensions, see applicable charts in text.

A proper tramming tool is essential for analyzing and determining the extent of collision misalignment present in underbody construction.

To assist in checking alignment of the underbody components, repairing minor underbody damage or locating replacement parts, the following underbody dimensions and alignment checking information is presented.

### Reference Point Dimensions-(Fig. 3-1 and 3-3)

Dimensions to gage holes are measured to dead center of the holes and flush to adjacent surface metal unless otherwise specified. The master gage holes, adjacent to the No. 1 body mount and in the side rails near the rear spring front attachment, are key locations and should be used wherever possible as a basis for checking other reference points.



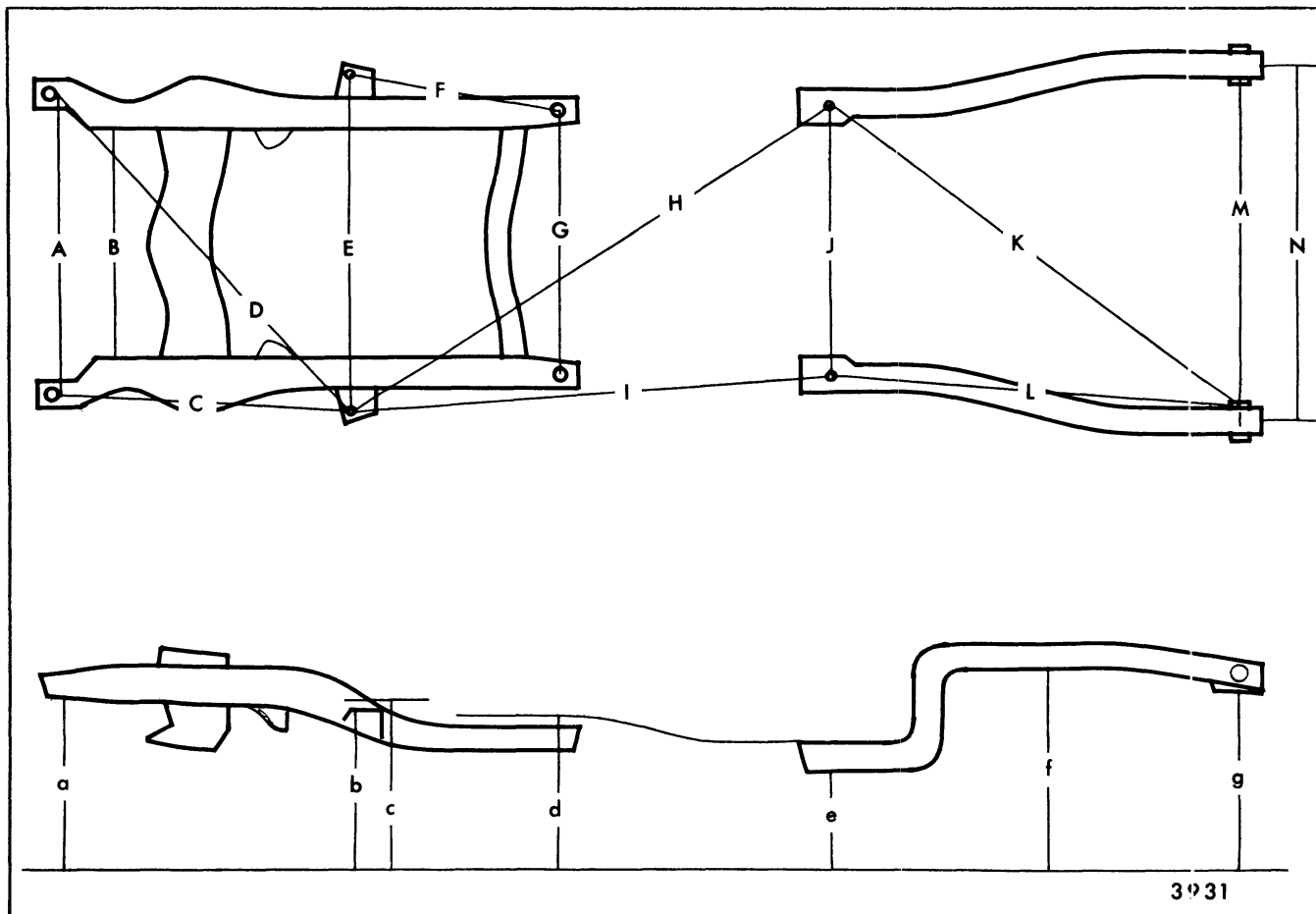


Fig. 3-1 Horizontal and Vertical Checking Dimensions - "F" Bodies

### Horizontal Dimensions - "F" Bodies (Fig. 3-1)

Fig. Ref.	Dimension	Location	Fig. Ref.	Dimension	Location
A	37-11/16	Between rear edges at centerline of 1-5/16" holes in lower surface of rails directly below radiator support mounting location.	D	57-1/4	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location to center of 5/8" master gage hole adjacent to No. 1 body mount on opposite side of frame.
B	28-13/16	Between inboard surface of rails at steering gear lower front mounting location and steering idler arm lower mounting location. (These locations are not equally distant from frame centerline).	E	45-1/4	Between centers of 5/8" master gage holes adjacent to No. 1 body mount in frame or body.
C	39-5/8	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location to center of 5/8" master gage hole adjacent to No. 1 body mount on same side of frame.	F	32-7/8	Center of 5/8" master gage hole adjacent to No. 1 body mount to center of No. 2 body mount location on same side of frame or body.
			G	33-7/16	Between centers of No. 2 body mount bolt holes.

Fig. Ref.	Dimension	Location
H	84-11/16	Center of 5/8" master gage hole adjacent to No. 1 body mount to center of 11/16" master gage hole in compartment side rail on opposite side of body.
I	74-1/16	Center of 5/8" master gage hole adjacent to No. 1 body mount to center of 11/16" master gage hole in compartment side rail on same side of body.
J	37-1/16	Between centers of 11/16" master gage holes in compartment side rails.
K	60-13/16	Center of 11/16" master gage hole in compartment side rail to a point at inboard lower edge of opposite side rail on centerline of shackle bolt hole (see Fig.3-2).
L	45-7/16	Center of 11/16" master gage hole in compartment side rail to a point at inboard lower edge of same side rail on centerline of shackle bolt hole (see Fig. 3-2).
M	43-11/16	Between inboard lower edges of compartment side rails on centerline of shackle bolt hole (see Fig. 3-2).
N	45-3/8	Between centers of rear bumper lower attaching bolt holes.

#### Vertical Dimensions - "F" Bodies (Fig. 3-1)

a	9-11/16	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location.
b	9-1/16	5/8" master gage hole in frame adjacent to No. 1 body mount.
c	9-15/16	5/8" master gage hole in body adjacent to No. 1 body mount.
d	6-9/16	Floor pan adjacent to No. 2 body mount cage nut.
e	3-15/16"	Compartment side rail adjacent to 11/16" master gage hole.

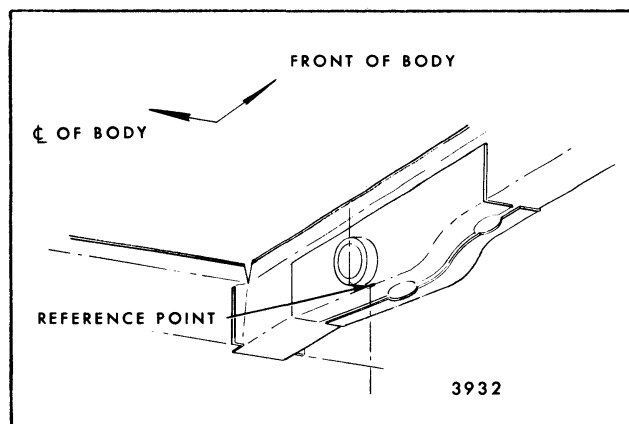


Fig. 3-2 Side Rail at Rear Spring Shackle Bushing - "F" Bodies

Fig. Ref.	Dimension	Location
f	17-1/16	Lower horizontal surface of compartment side rail above rear axle housing.
g	13-1/4	Lower surface of compartment side rail at centerline of shackle bolt hole (see Fig. 3-2).

#### Horizontal Dimensions- "X" Bodies (Fig. 3-3)

A	38-1/4	Rear edge at centerline of 7/8" hole in lower surface of rail approximately 2" rearward of lower front edge of rail.
B	35-1/4	Rear edge at centerline of 7/8" hole in lower surface of rail approximately 2" rearward of lower front edge of rail and center of master gage hole adjacent to No. 1 body mount on same side of body.
C	54-3/16	Rear edge at centerline of 7/8" hole in lower surface of rail approximately 2" rearward of lower front edge of rail and center of master gage hole adjacent to No. 1 body mount on opposite side of body.
D	44-9/16	Center of master gage hole adjacent to No. 1 body mount.

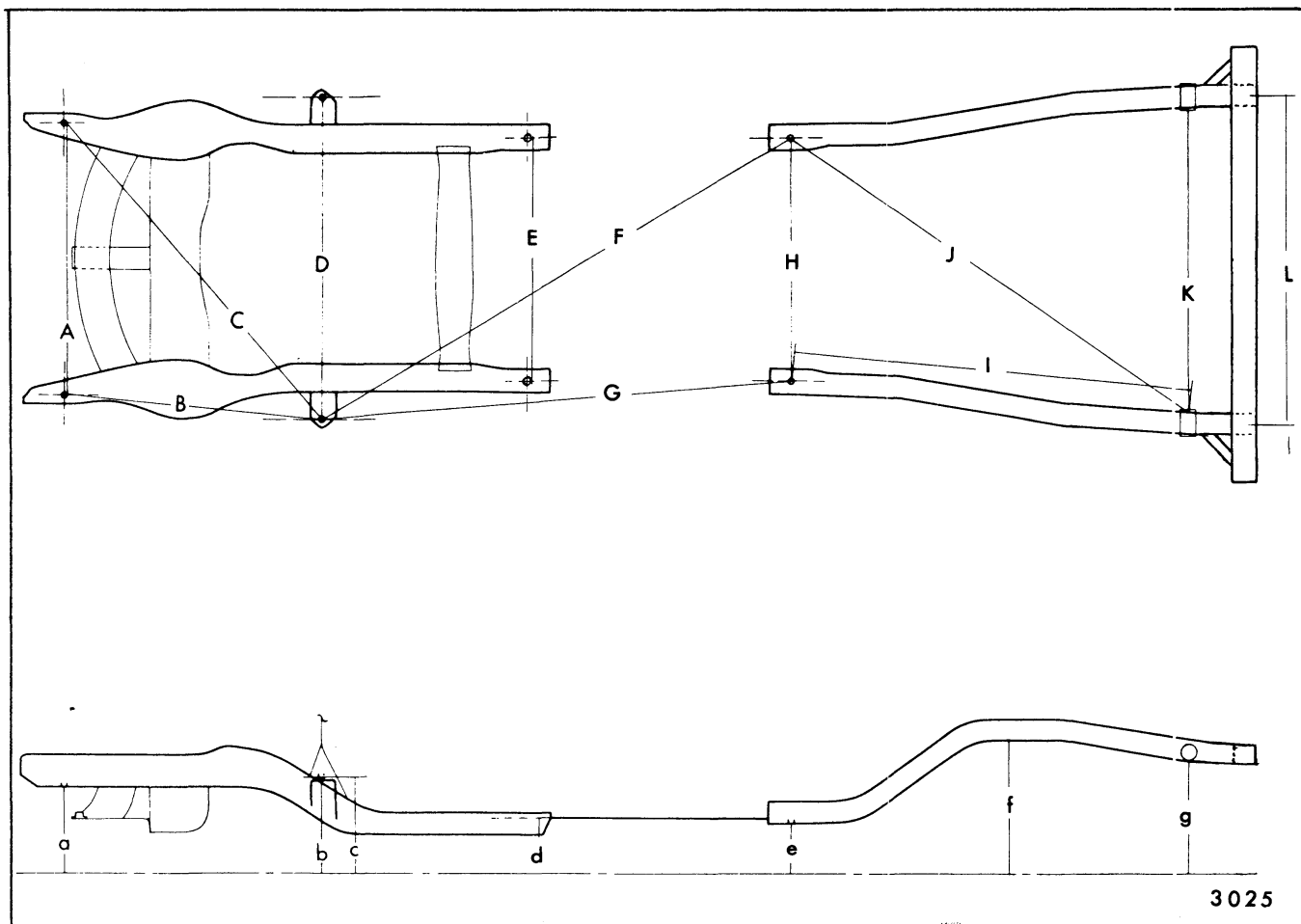


Fig. 3-3-Horizontal and Vertical Checking Dimensions - "X"  
Bodies

Fig. Ref.	Dimension	Location
E	33-3/4	Rear edge at centerline of No. 2 body mount bolt hole.
F	79-1/16	Center of master gage hole adjacent to No. 1 body mount and center of master gage hole in side rail on opposite side of body.
G	69	Center of master gage hole adjacent to No. 1 body mount and center of master gage hole in side rail on same side of body.
H	33-3/16	Between centers of master gage holes in compartment side rails.
I	54-11/16	Center of master gage hole in side rail and a point at inboard edge of same side rail at centerline of shackle bolt hole (see Fig. 3-4).

Fig. Ref.	Dimension	Location
J	66-3/8	Center of master gage hole in side rail and a point at inboard edge of opposite side rail at centerline of shackle bolt hole (see Fig. 3-4).
K	42-5/8	Between inboard lower edges of compartment side rails on centerline of shackle bolt hole (see Fig. 3-4).
L	41-15/16	Center of rear bumper lower attaching bolts.

#### Vertical Dimensions- "X" Bodies (Fig. 3-3)

a	10-1/8	7/8" hole in lower surface of rail approximately 2" rearward of lower front edge of rail.
---	--------	---

Fig. Ref.	Dimension	Location
b	10-15/16	Master gage hole adjacent to No. 1 body mount in frame.
c	11-13/16	Master gage hole adjacent to No. 1 body mount on body.
d	6-21/32	Floor pan adjacent to No. 2 body mount bolt cage nut.
e	6-7/16	Master gage hole in side rail.
f	12-7/32	Lower surface of side rail at kick-up either side of rear axle housing.
g	10-5/16	Lower surface of side rail at centerline of shackle bolt hole (see Fig. 3-4).

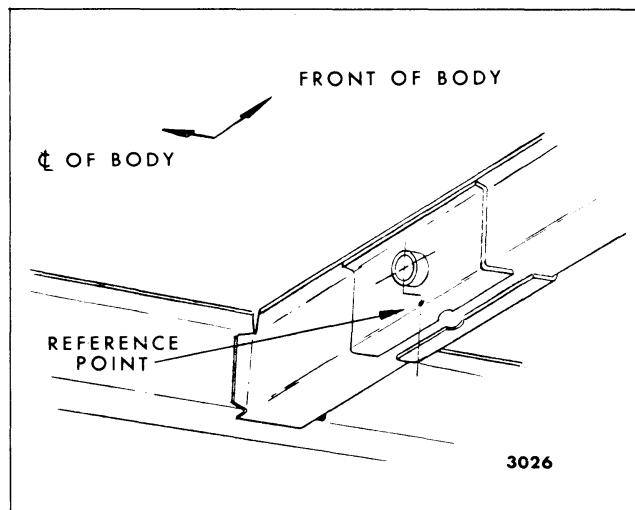


Fig. 3-4-Side Rail at Rear Spring Rear Shackle Bushing

## GAS TANK FUEL EMISSION SEPARATOR

### DESCRIPTION

On "F" style bodies, gas tank fuel emission separator extends upward through piercing in rear compartment pan and is attached by screws to both rear compartment pan and to forward side of rear seat back panel (cargo barrier). The compartment pan attaching area requires a gasket to assure a positive

seal against intrusion of fumes, dust or water into body interior.

For information on "F" and all other styles regarding removal, installation or general service procedures of fuel emission separator, refer to the applicable car division chassis service manual.

## SECTION 4

# FRONT END

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## BODY VENTILATION

### DESCRIPTION (Non-Air Conditioned Styles)

Body ventilation systems on non-air conditioned styles are comprised of a low-level system; or a combination of a low-level and a high-level system depending upon body style.

All body styles are furnished with a fresh air intake at the front plenum chamber. On "F-X" styles the low-level ventilation system consists of fresh air outlets in each shroud side panel and is standard equipment on all styles. On "A-B-C-E" styles, the low-level system air outlets are located in the lower wall of the right shroud vent side duct panel and the lower wall at left end of shroud vent duct center panel (Fig. 4-1).

The high-level ventilation system is standard equipment on all "A-B-C-E-F" styles.

High-level ventilation systems include the following components:

1. High-level air outlet(s) on the instrument panel.
2. Pressure relief valves (air exhaust outlets) on rear body lock pillars.

For instructions on operation of the body ventilation system, refer to the "Owner's Manual".

Ventilating air enters the front plenum chamber through an air intake grille and/or screen. Air is directed through the plenum chamber to the high-level air outlet door(s) and/or to the low-level air outlet doors. When ventilation controls are operated, air enters past the respective doors and into the body.

On styles with high-level ventilation, air passes through the body, under the rear seat, and into the rear compartment. The air then passes into the rear quarters and leaves the body passing through the pressure relief valves located on the rear body lock pillars (Figs. 4-10 and 4-11).

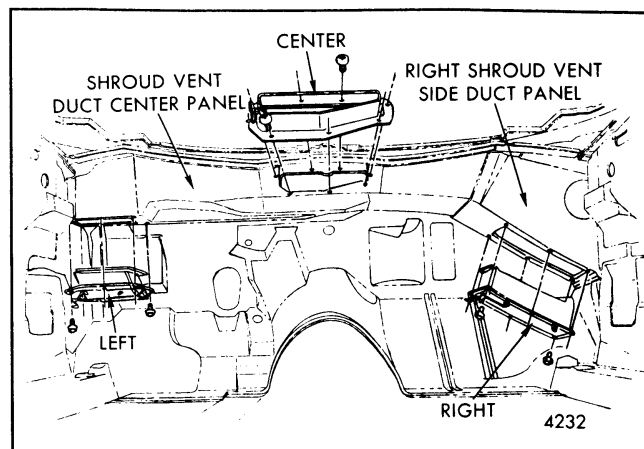


Fig. 4-1-Air Duct Outlet Locations

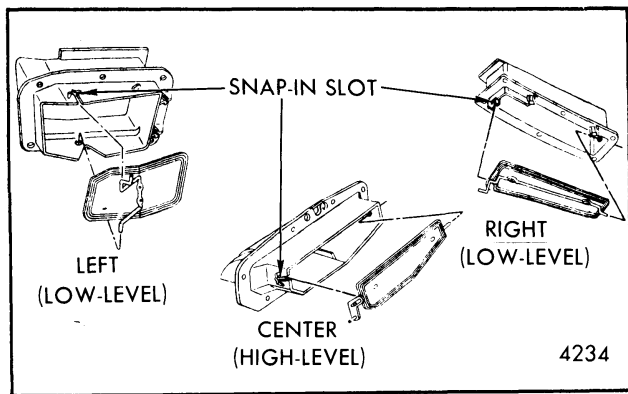


Fig. 4-2-High-Level and Low-Level Air Outlets and Doors - "B-C-E" Styles ("A" Styles Similar)

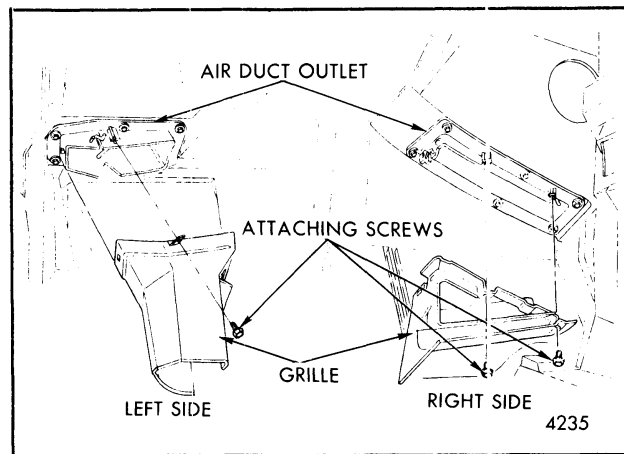


Fig. 4-3-Low-Level Air Outlet Grilles - "B-C-E" Styles ("A" Style Similar)

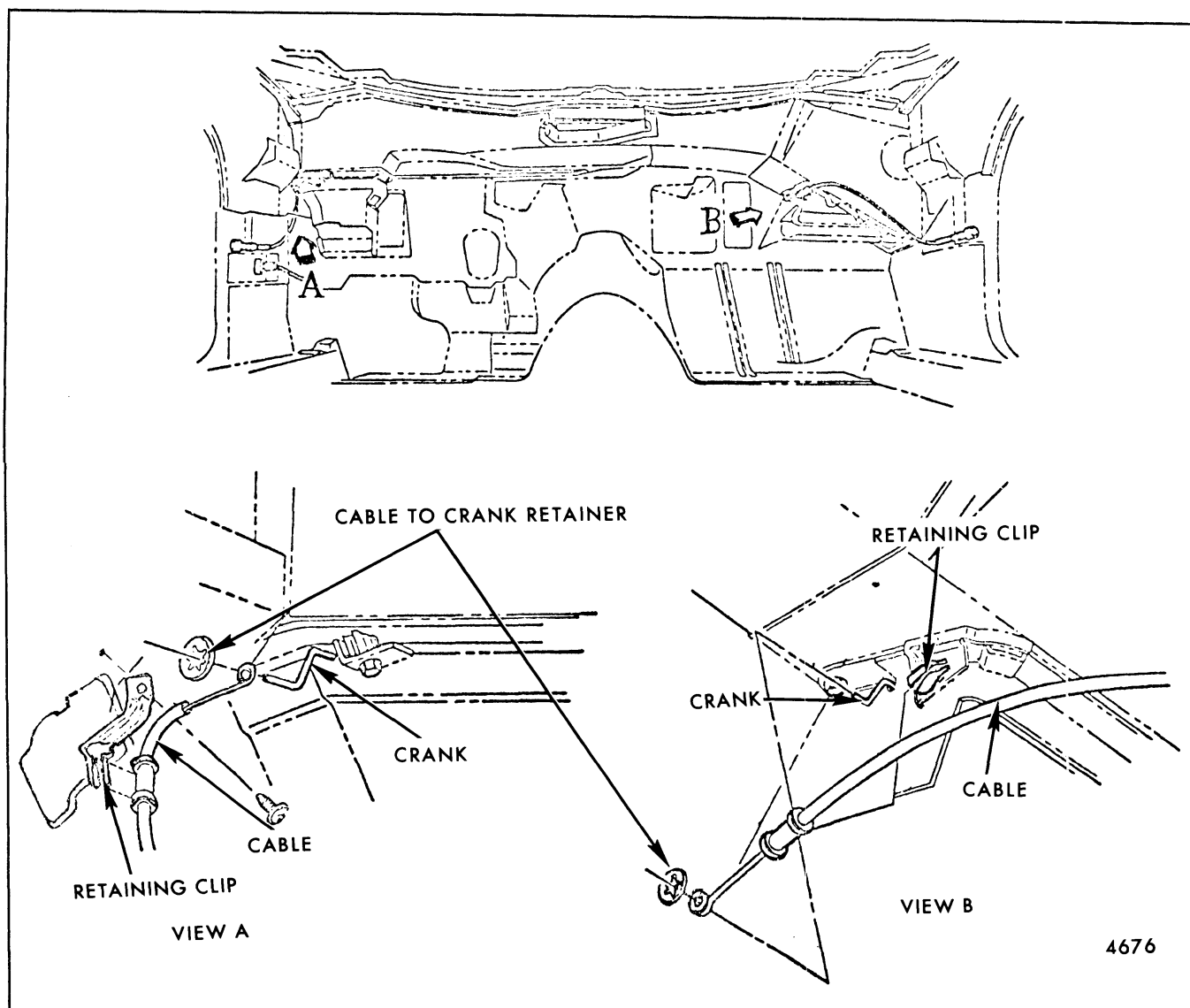


Fig. 4-4-Low-Level Air Outlet Control Cables

Water entering the front plenum chamber on "F-X" styles is channeled to the base of the shroud side panels where it is drained through openings provided for that purpose. On "A-B-C-E" styles the water is channeled to the outboard ends of the plenum chamber where it is discharged through flat deflection type drain valves.

### SHROUD CENTER DUCT HIGH-LEVEL AIR OUTLET AND DOOR - "A-B-C-E" Styles

The outlet and door are shown in Figures 4-1 and 4-2.

To remove door from air duct outlet, disengage control cable from door and slide crank end of door from snap-in slot in duct assembly and remove door.

The high-level air duct outlet is sealed with a gasket at the attaching flanges and is secured to the center duct panel with screws.

**NOTE:** If the gasket becomes damaged, the duct outlet can be sealed to the center duct panel with medium bodied sealer.

### LOW-LEVEL AIR DUCT OUTLET, DOOR AND GRILLE - "A-B-C-E" Styles

To remove grille from air duct outlet on "B-C-E" Styles, remove grille to air outlet attaching screw(s). The left grille is retained by one screw and the right grille by two screws (Fig. 4-3). Disengage grille from retaining tabs on outlet and remove grille. On "A" Styles, the left grille is retained by one screw and the right grille is an integral part of the air duct outlet. To install, reverse removal procedure.

To remove air outlet door, remove grille as previously described, remove control cable to door crank retainer and disengage control cable from crank (Fig. 4-4). Disengage crank end of door from snap-in slot of air outlet and remove door. To install, reverse removal procedure.

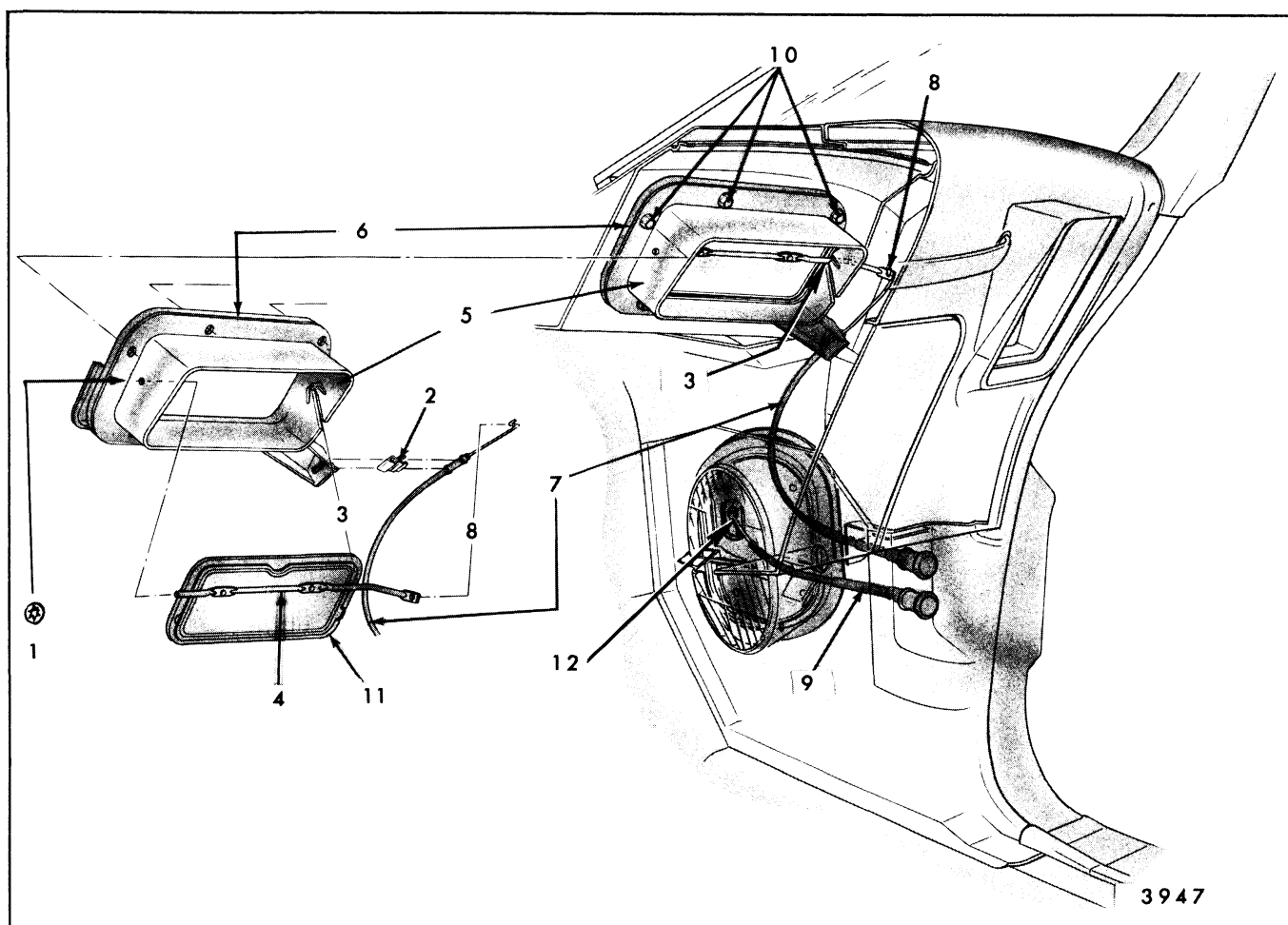


Fig. 4-5-Shroud Center Duct High-Level Air Outlet and Door "F" Styles

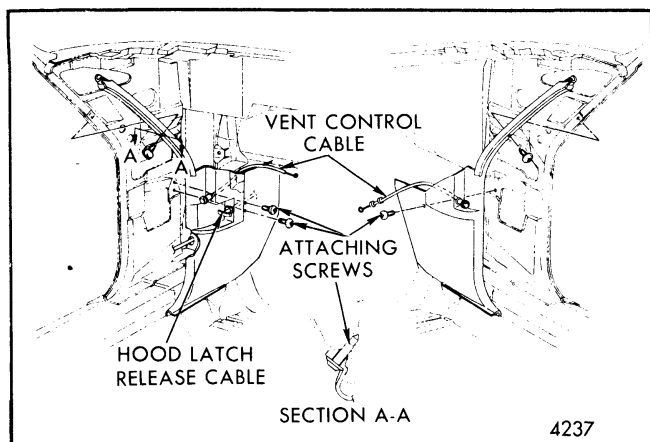


Fig. 4-6-Shroud Side Finishing Panel - "B-C-E" Styles ("A" Styles Similar)

To remove air duct outlet, remove grille and disconnect control cable as previously described. Remove air duct outlet attaching screws and remove duct outlet assembly.

**NOTE:** In case of gasket damage, seal the duct outlet to duct opening with medium bodied sealer.

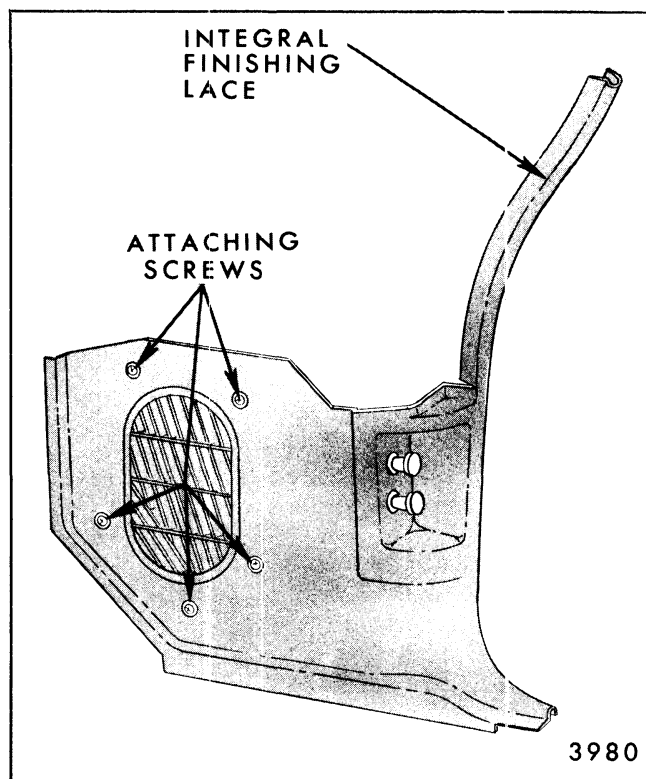


Fig. 4-7-Shroud Side Finishing Panel - "F" Styles

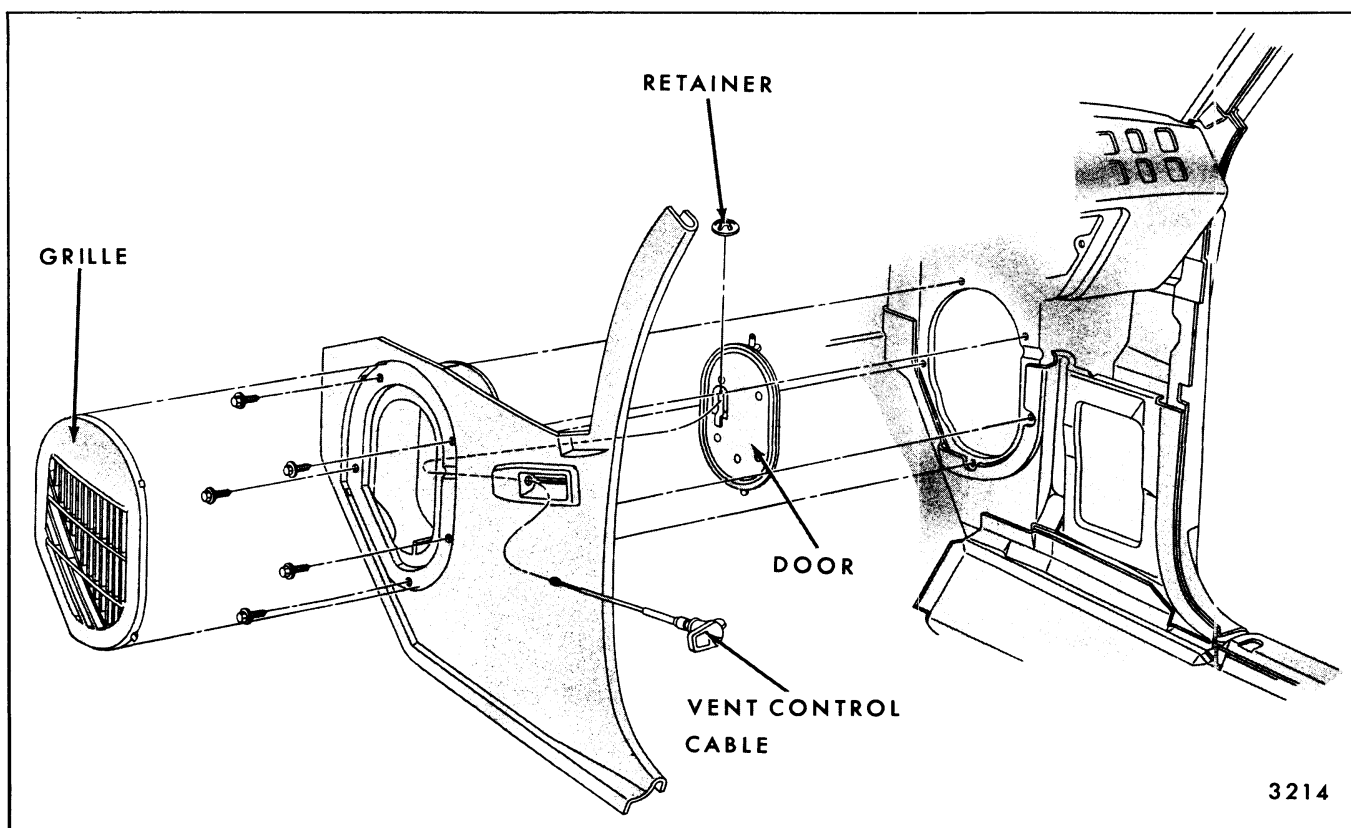


Fig. 4-8-Shroud Side Finishing Panel - "X" Styles



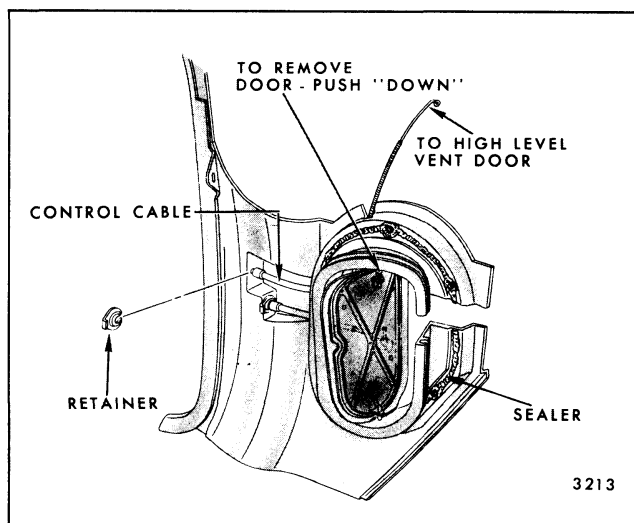


Fig. 4-9-Shroud Side Finishing Panel Sealing - "F-X" Styles

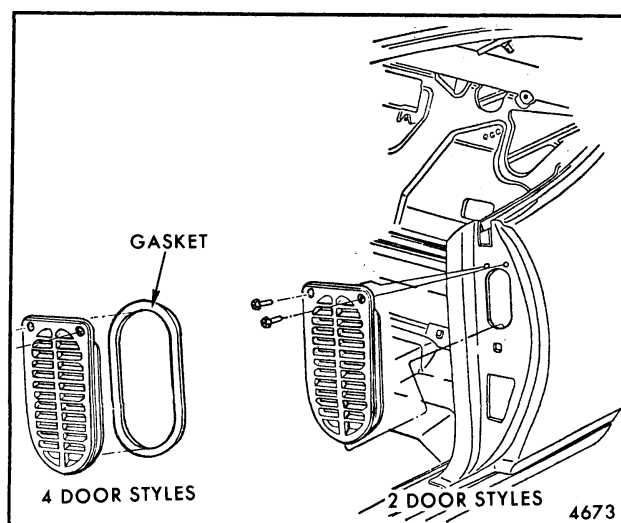


Fig. 4-11-Pressure Relief Valve - "A-B-C-E-X" Styles

## SHROUD CENTER DUCT HIGH-LEVEL AIR OUTLET AND DOOR - "F" Styles

The air duct outlet, door and control cable attachment is illustrated in Figure 4-5.

The door can be removed by removing retaining clip (Fig. 4-5) removing control cable from retaining clip and rotating control cable out of crank on door.

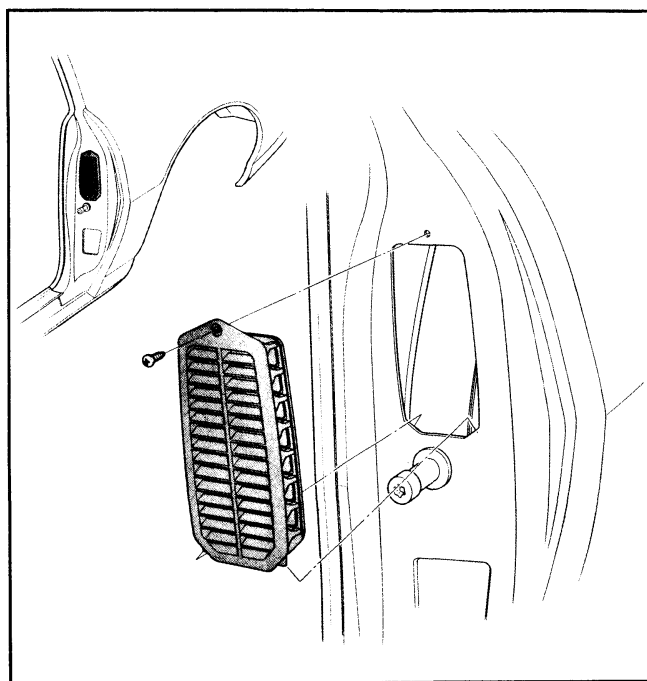


Fig. 4-10-Pressure Relief Valve - "F" Styles

Disengage snap-in type control rod from duct assembly and slide door out of duct opening.

To remove duct outlet, disengage control cable from door and remove duct outlet to center duct panel attaching screws. To install, reverse the removal procedure.

**NOTE:** In case of gasket damage, seal the duct outlet to center duct panel with medium bodied sealer.

## SHROUD SIDE FINISHING PANEL - "A-B-C-E-F and X" Styles

On "F-X" styles, the shroud side finishing panel is designed with an integral air duct outlet and hinge pillar pinchweld finishing lace. The following are added to the finishing panel before installation: air outlet door and upper and/or lower vent control cables. The attaching flanges of the panel must be sealed to the contacting panel. If the original seal is damaged or disturbed, apply medium bodied sealer around the attaching flanges (Fig. 4-9). The finishing panel is secured by screws at the side panel. A snap-in type grille completes the installation on the "X" styles. The grille on the "F" style is an integral part of the finishing panel.

Removal of the low-level air duct door and/or upper and lower vent control cable requires removal of the finishing panel. (Figures 4-6, 4-7 and 4-8 depict types of finishing panels and their installation)

On "B-C-E" styles the shroud side finishing panel is designed with an integral hinge pillar pinchweld finishing lace. A lower vent control cable is added to each finishing panel and a hood latch release cable to the left panel before installation. The left finishing panel is secured by two screws, the right by one screw, at the shroud side panel, and one screw in each panel at the hinge pillar (Fig. 4-6).

## PRESSURE RELIEF VALVE - "A-B-C-E-F-X" Styles

On all styles with ventilation systems, pressure relief valves are attached to rear lock pillars with screws. Figures 4-10 and 4-11 show the pressure relief valve installations.

## HOOD LATCH RELEASE CABLE - "A-B-C-E" STYLES

### DESCRIPTION

The rear section of the hood latch release cable includes the pull handle, control cable and housing. The control cable is installed through the left shroud side finishing panel (Fig. 4-12). A sealing grommet at the dash panel completes the assembly.

### Removal and Installation

1. Raise hood and disengage rear cable from connector.
2. Remove sealing grommet from dash panel and remove grommet from cable.
3. Remove left shroud side finishing panel, including cable assembly, sliding control cable through hole in dash panel.
4. Disengage control assembly housing from snap-in slot of finishing panel (Fig. 4-12) and remove

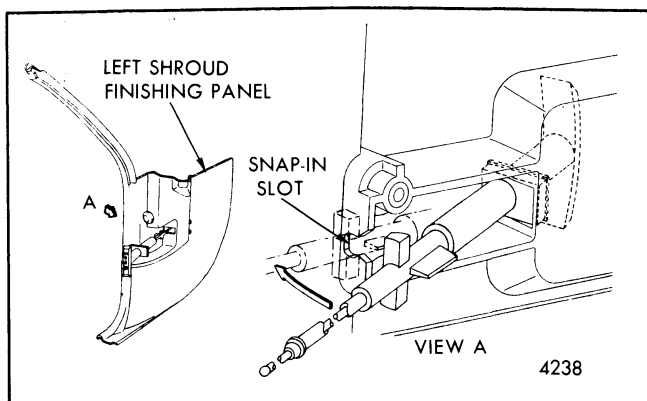


Fig. 4-12-Hood Latch Release Cable

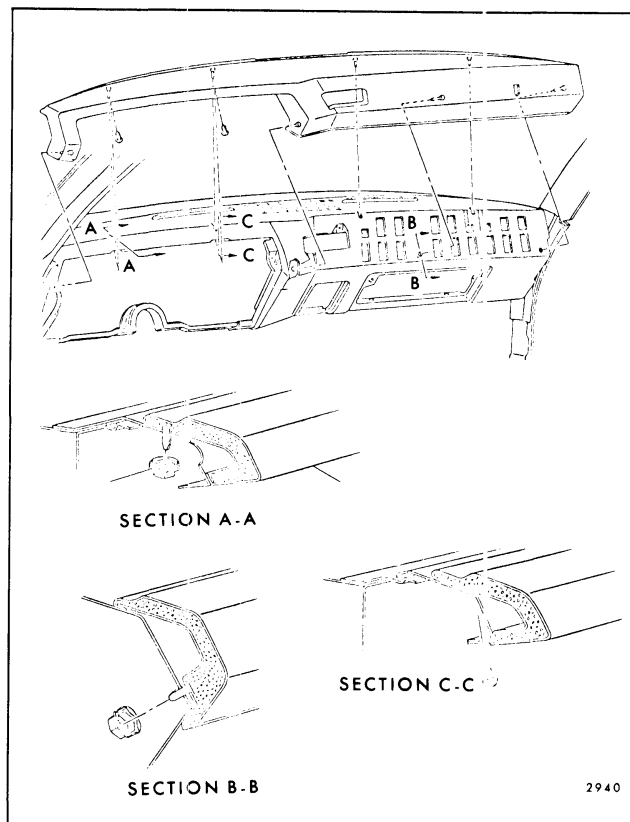


Fig. 4-13-Instrument Panel Cover - "X" Styles

cable assembly from panel pulling toward pull handle end.

5. To install, reverse the removal procedure. When installing grommet, hold the cable taut and force grommet into hole in dash panel.

## INSTRUMENT PANEL COVER ("X" BODY)

### DESCRIPTION

The instrument panel cover is secured to the instrument panel by a combination of screws, stud and clip assemblies, clips, and stud and nut assemblies. The

cover attachment locations are shown in Figure 4-13.

**NOTE:** For instrument panel covers on other series and body styles, refer to the chassis service manuals.

## SECTION 5

# DOORS

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## DOOR TRIM

### INTRODUCTION

This portion of the manual contains the service operations that are necessary for the removal and installation of door trim assemblies.

Body series or styles references in the procedures are explained under "General Information", Section I of this manual.

### DOOR PULL HANDLES

Door pull handles are secured to the trim pad with screws or stud nuts on the outboard (reverse) side of the trim assembly prior to trim installation. In addition, on some styles, the handles are secured to the door inner panel with screws installed from the in-board side after trim installation. With this method of installation, the pull handle and trim pad are removed from the door as an assembly (Figs. 5-1, 5-2 and 5-3).

**NOTE:** To remove the door trim assembly on any style equipped with a door pull handle requires removal of the screws inserted through the handle hinges or handle base into the door inner panel. On styles with snap-on escutcheons covering the handle screws, carefully disengage the escutcheons from the retainers using a flat-bladed tool (Figs. 5-1, 5-2 and 5-3). On styles with stud retained escutcheons (Figure 5-2), pry alternately from both ends of the escutcheon to prevent stud breakage during removal operation.

### DOOR ARM RESTS

There are two basic types of door arm rests: those applied after door trim installation and those which are an integral part of the door trim assembly. For removal of the first type arm rests, refer to Figure 5-4.

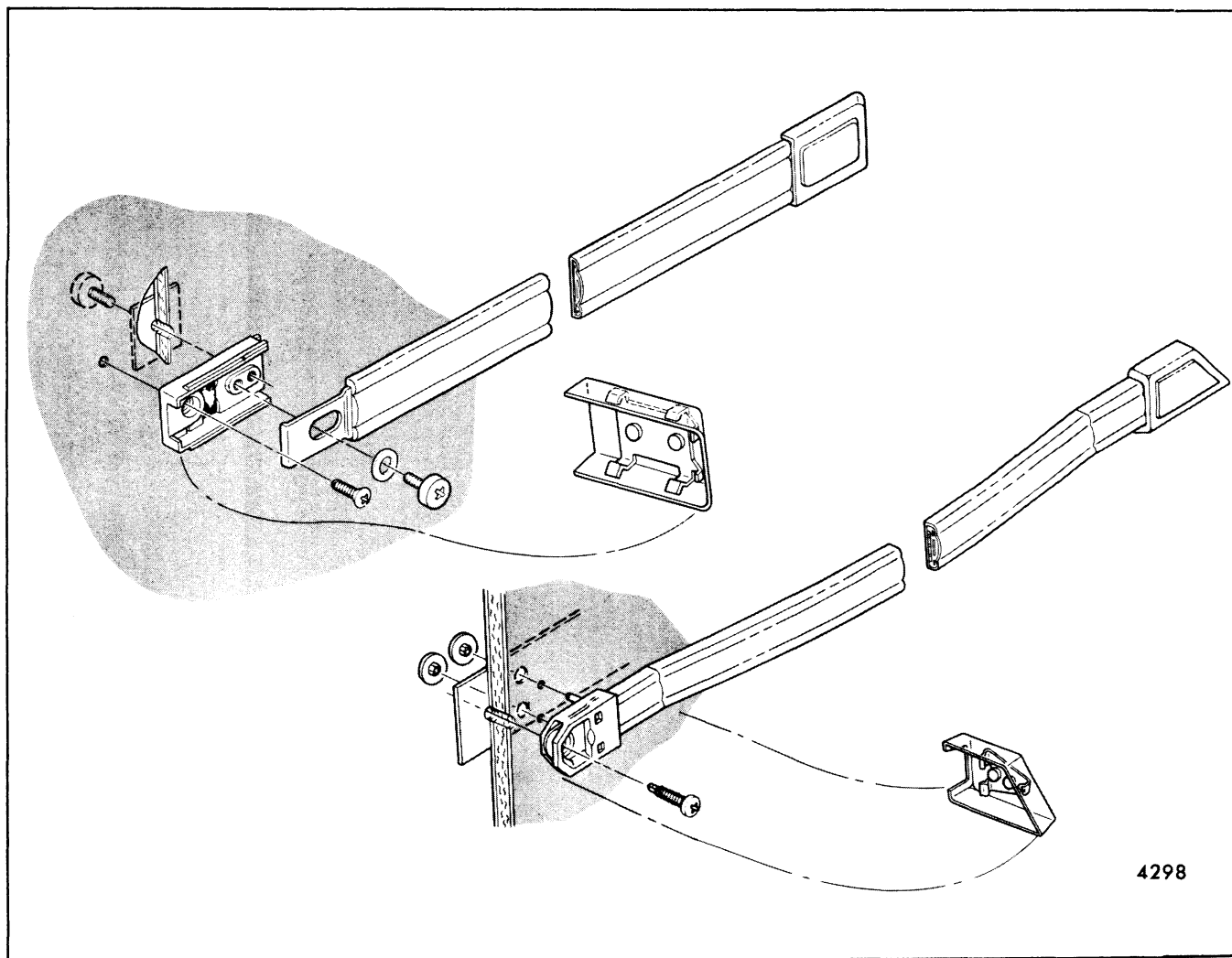


Fig. 5-1-Typical Door Pull Handle Attachment

## DOOR OUTSIDE MIRROR REMOTE CONTROLS AND ESCUTCHEON

On most styles with remote control door outside mirrors, the remote control mirror cable must be disengaged from the door trim assembly or arm rest to permit trim assembly removal. To disengage the remote cable from the door trim assembly, refer to Figures 5-5, 5-6 and 5-7.

On "A-57" styles remove upper door trim assembly. Grasp retainer and rotate 90 degrees to separate remote control cable from previously installed escutcheon (see Fig. 5-6).

## DOOR INSIDE HANDLES

Door inside handles are retained by either screws or spring clips (Figs. 5-8, 5-9 and 5-10). On styles

equipped with screw retained handles, the screws are either exposed or covered by a remote control cover plate that can be removed as shown in Figures 5-9 and 5-10.

### Removal and Installation

1. On styles with clip retained handles, clip is either exposed when arm rest is removed, or else is hidden by handle (Figs. 5-8 and 5-10). Exposed clips can be disengaged from remote control spindle with a screwdriver.

Clips hidden by window regulator or remote control handles can be disengaged by depressing door trim assembly sufficiently to permit inserting tool J-9886 or equivalent between handle and plastic bearing plate (Fig. 5-12). Then, with tool in same plane as inside handle, push tool as indicated to disengage clip. Pull handle inboard to remove from spindle.

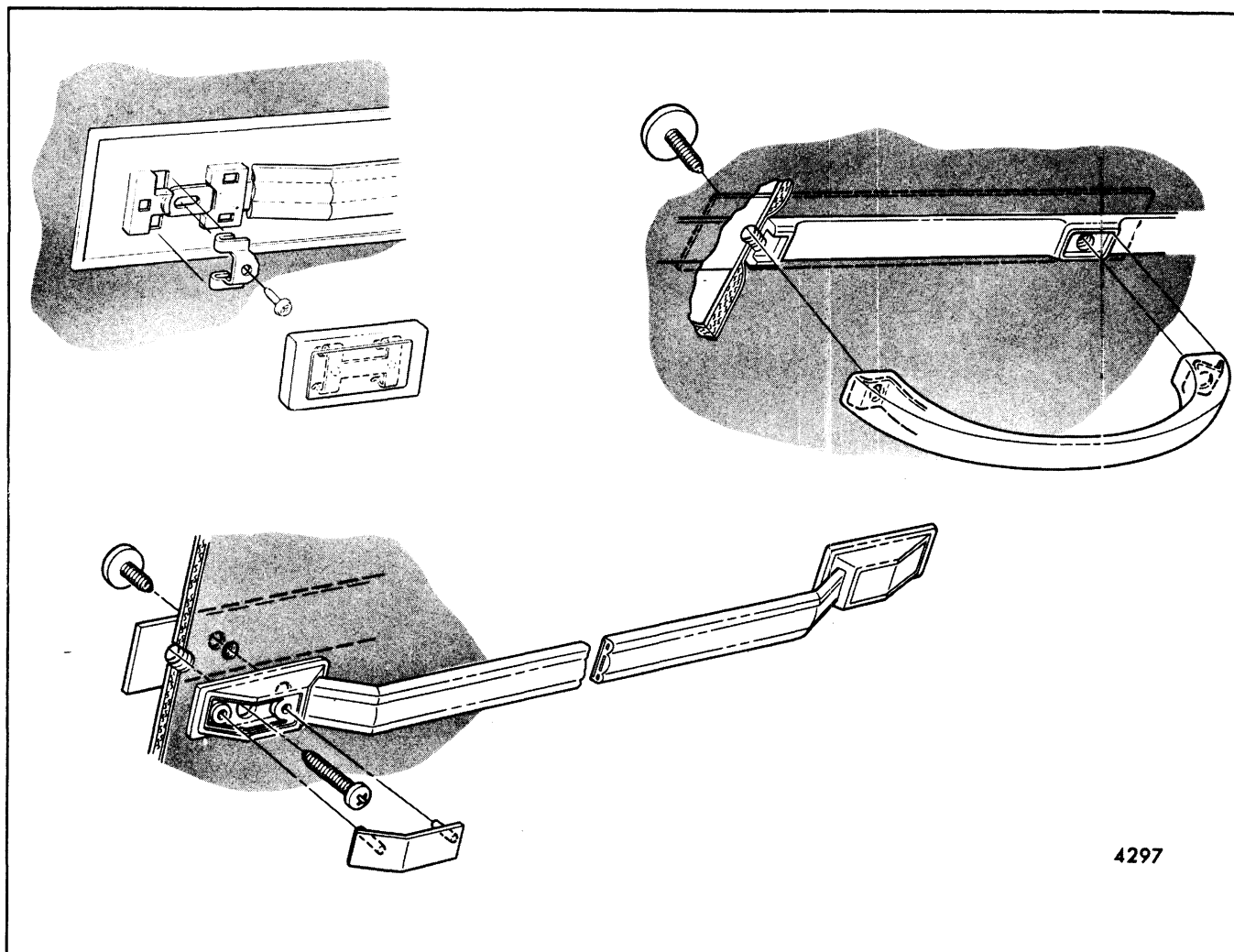


Fig. 5-2-Typical Door Pull Handle Attachment

2. To install window regulator handles, engage retaining clip on handle. Position handle at same angle as opposite side handle and press handle outboard until clip engages regulator spindle. On remote control spindles, install handle in a horizontal position.

On "A, B, C, E and F" styles with the two piece trim, the upper portion hangs over the door inner panel across the top and is secured by trim nails, or screws, across the bottom. The lower portion is retained by screws across the top and by clips down the sides and across the bottom.

## DOOR TRIM ASSEMBLIES

There are two basic types of door trim assemblies, a one piece trim assembly that is used on "X" styles and a two piece trim that is used on "A, B, C, E and F" styles.

On "X" styles, the one piece trim hangs over the door inner panel across the top and is secured by clips down the sides, and across the bottom. (Fig. 5-13 is a composite illustration of the various types of door trim panel fasteners).

## Removal and Installation

1. Remove all door inside handles as previously described.
2. Remove door inside locking rod knob.
3. On styles equipped with door pull handles, remove screws inserted through handle into door inner panel. (For location of screws, refer to Figs. 5-1, 5-2 and 5-3).

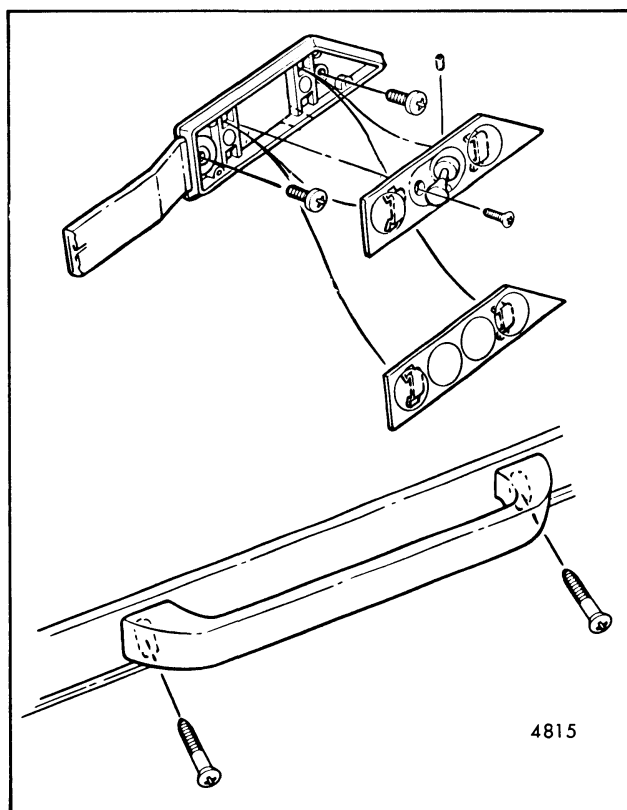


Fig. 5-3-Typical Door Pull Handle Attachment

4. On styles with remote control mirror assemblies, remove remote mirror escutcheon and disengage end of mirror control cable from escutcheon as previously described (Figs. 5-5, 5-7 and 5-3).

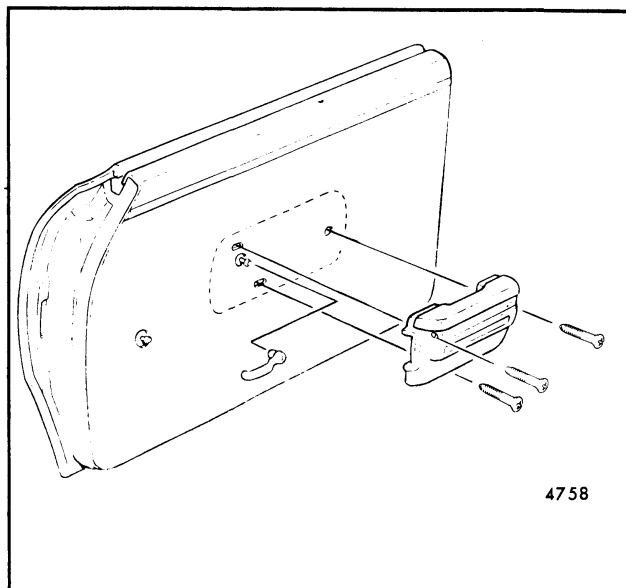


Fig. 5-4-Typical Door Arm Rest Applied After Trim Installation

5. On styles equipped with switch cover plate in door arm rest, remove screws securing cover plate and disconnect switches and cigar lighter (if equipped) from wire harness connectors (Fig. 5-7).
6. On styles with remote control cover plates (Figs. 5-9 and 5-71), remove exposed screws securing cover plate to door inner panel.
7. On styles with integral arm rest, remove screws inserted through pull cup into arm rest hanger support. On styles with arm rest applied after door trim installation (Fig. 5-4), remove arm rest to door inner panel attaching screws.
8. On Cadillac styles, remove windshield wiper control switch to "pod" attaching screw (Fig. 5-14) and disconnect wire harness at switch assembly.
9. On styles, with two piece trim assemblies, remove attaching screws located at each side of upper trim assembly. Then, using tool J-9886 or equivalent, disengage retaining nails from plastic cups inserted in door inner panel along lower edge of upper trim if present. Remove upper trim from door by lifting upward and sliding it slightly rearward to disengage it from door inner panel at beltline.

**NOTE:** On styles with electric switches located in door trim assembly, disconnect wire harness at switch assembly.

To remove lower trim, remove attaching screws along upper edge of lower trim assembly. Then, starting at a lower corner, insert tool J-9886 or equivalent, between door inner panel and trim assembly and disengage retaining clips down both sides and across bottom.

**NOTE:** On styles with courtesy lamps located in lower trim assembly, disconnect wire harness at lamp assembly (Fig. 5-15).

10. On "X" styles with one piece trim assemblies remove all clips down both sides and across bottom of door trim pad using tool J-9886 or equivalent (Fig. 5-13).

To remove trim assembly, lift trim assembly upward and slide it slightly rearward to disengage it from door inner panel at the beltline. On styles with electric switches located in the door trim assembly, disconnect wire harness and remove trim assembly from door.

11. To install door trim assemblies, reverse removal procedure.

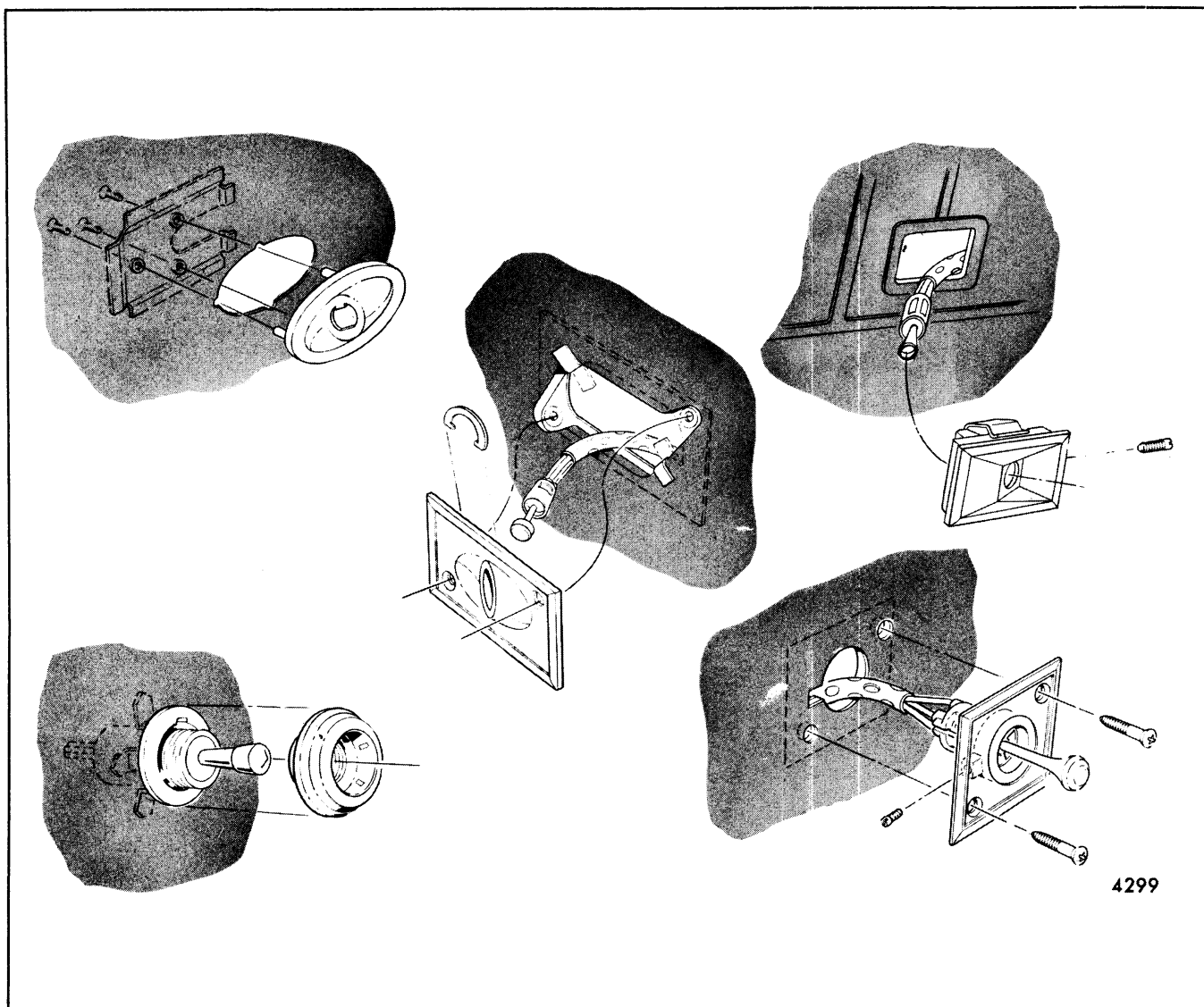


Fig. 5-5-Typical Remote Mirror Cable and Escutcheon Attachment

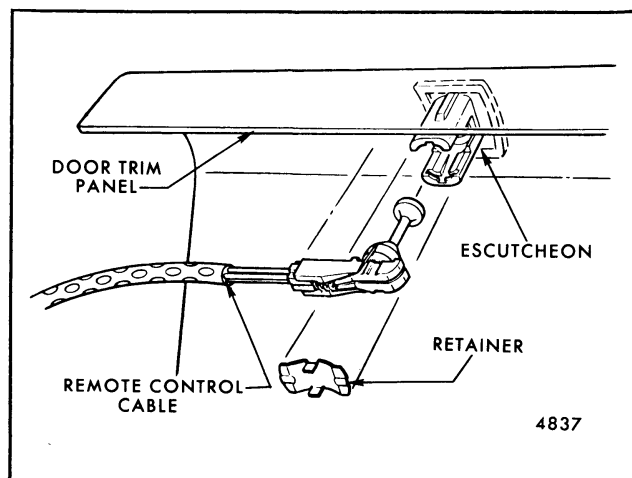


Fig. 5-6-Remote Mirror Cable Attachment - "A-57" Style

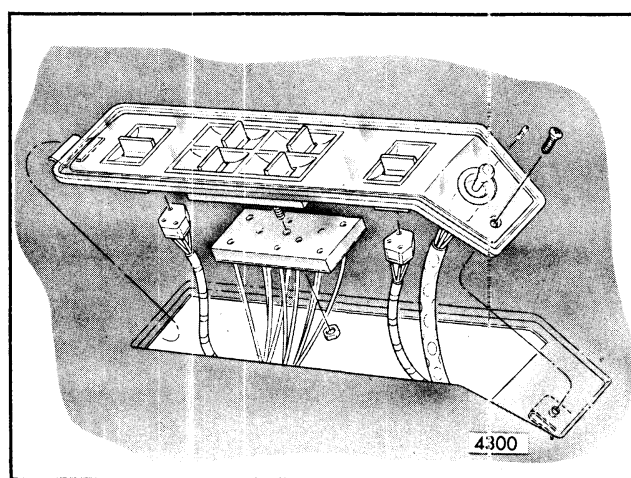


Fig. 5-7-Door Armrest Switch Cover Plate and Remote Mirror Cable Attachment



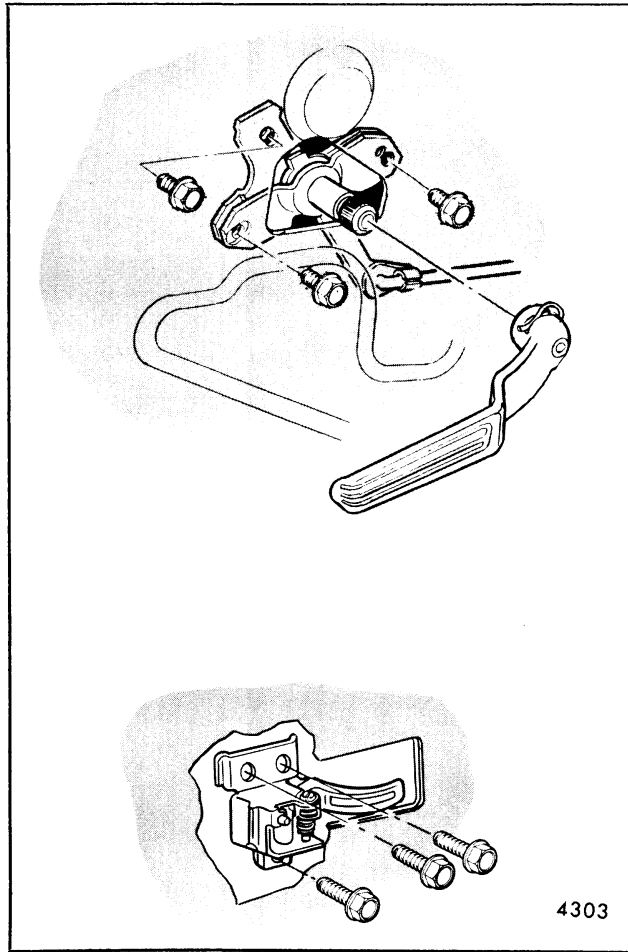


Fig. 5-8-Typical Door Lock Remote Control Handle Installations

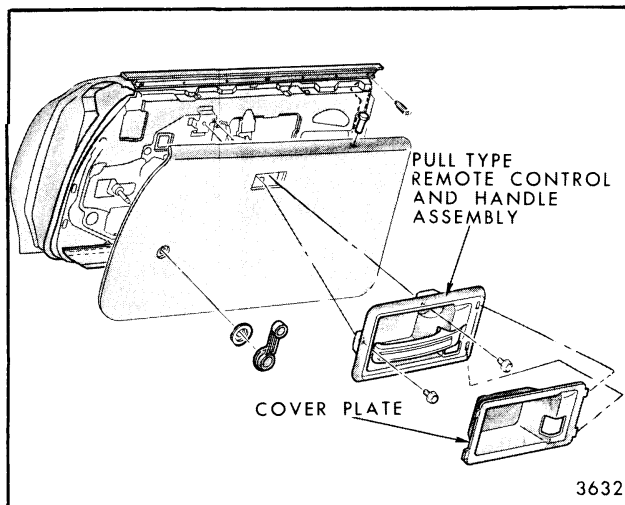


Fig. 5-9-Typical Door Lock Remote Control and Handle Assembly Installation

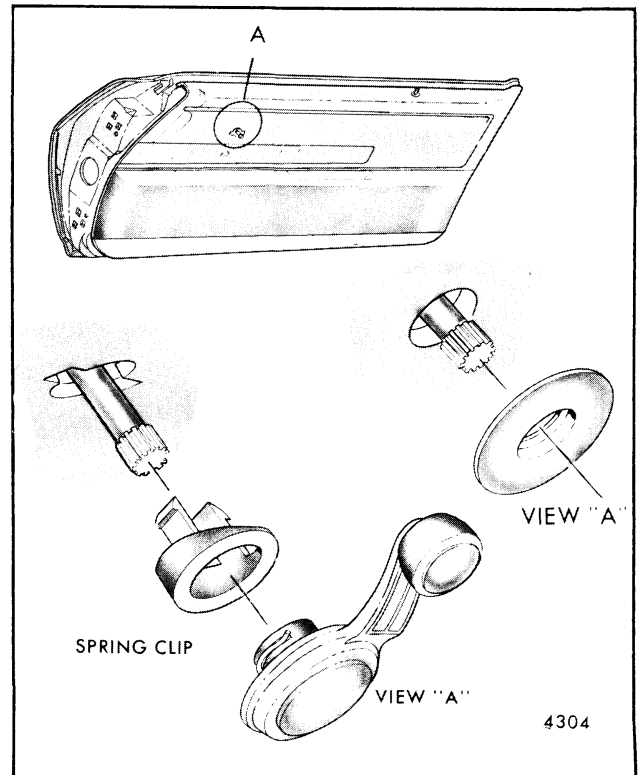


Fig. 5-10-Typical Window Regulator Handle Assembly Installation

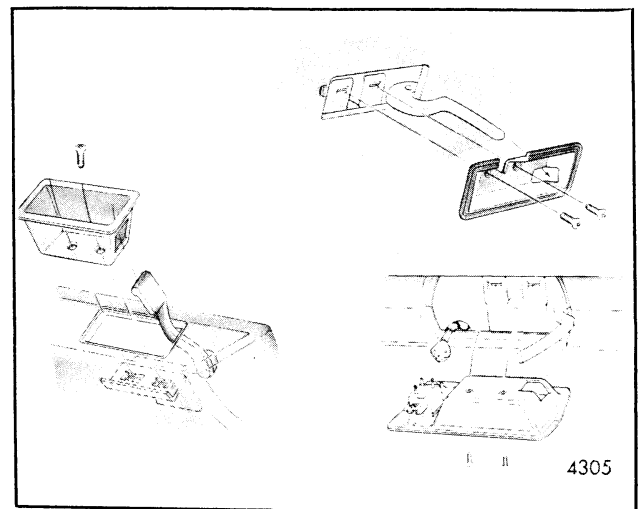


Fig. 5-11-Typical Remote Control Cover Plate Installations

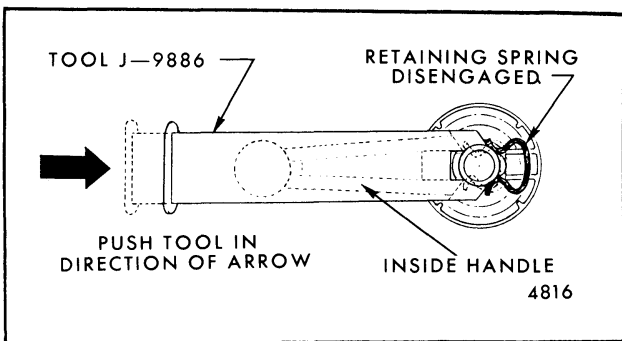


Fig. 5-12-Clip Retained Door Inside Handle Removal

**NOTE:** On styles with adjustable trim supports at belt line, the door trim assembly can be adjusted in or out so as not to restrict door window operation.

## DOOR TRIM PANEL MOLDINGS AND APPLIQUES

Door trim moldings and appliques are secured from the outboard side of the door trim panel with several types of metal fasteners (Fig. 5-16) or bend-over tabs.

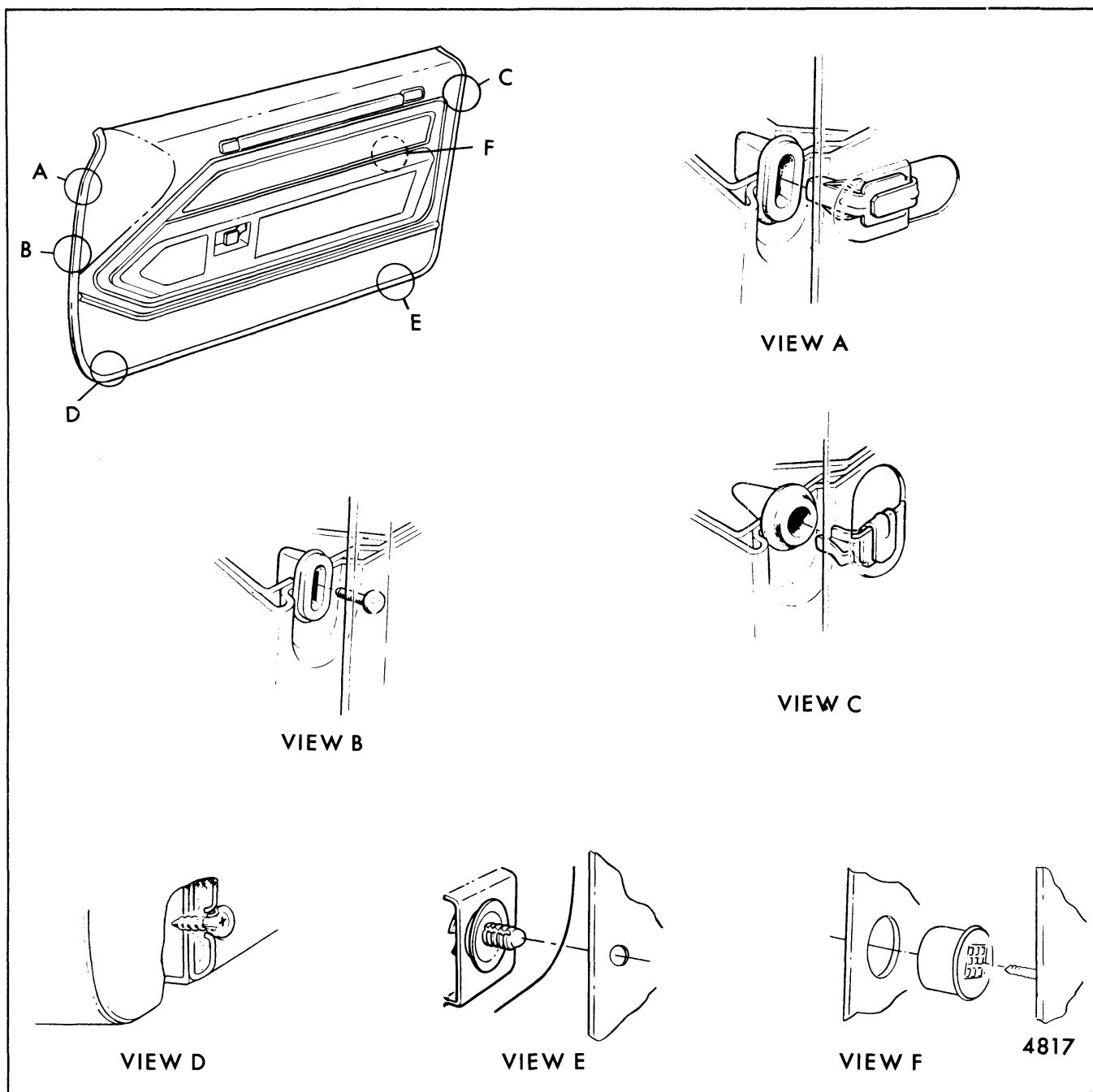


Fig. 5-13-Typical Types of Door Trim Retention

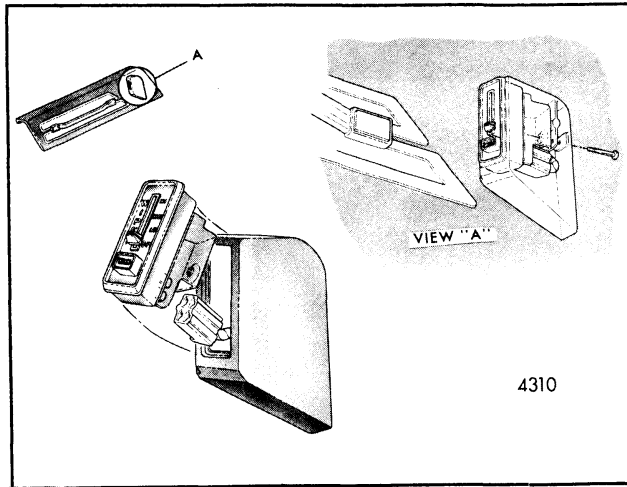


Fig. 5-14-Windshield Wiper Control Switch Removal and Installation

### Removal and Installation

1. Remove door trim assembly as previously described.
2. For removal of type "A" fasteners, Figure 5-16, use tool J- 23554 or equivalent.
3. To remove type "B" fasteners, Figure 5-16, carefully pry-up on fastener until there is sufficient working space to insert wire cutter; then, cut fastener and discard.
4. For removal of type "C" fasteners, Figure 5-16, use a cross head type screwdriver.
5. To install, reverse removal procedure.

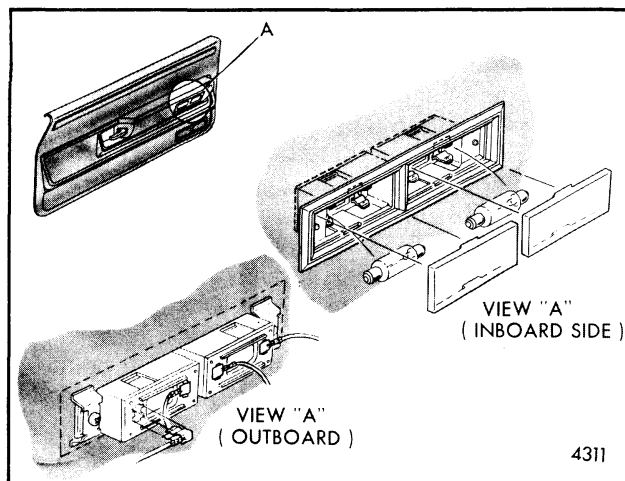


Fig. 5-15-Courtesy Lamp Removal and Installation

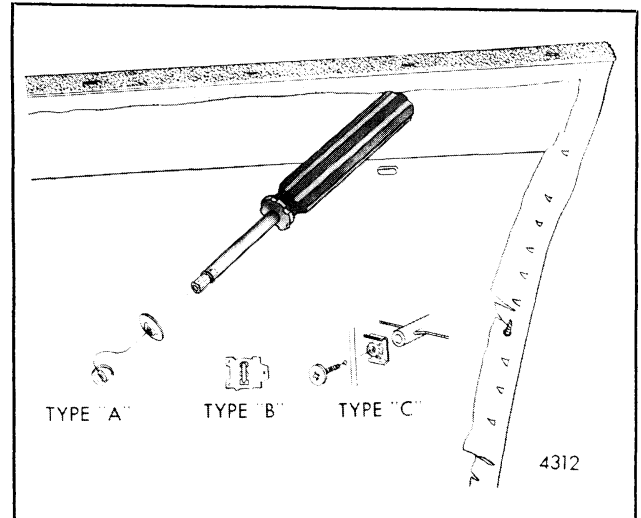


Fig. 5-16-Door Trim Pad Molding and Applique Removal

### CENTER PILLAR TRIM - All Styles, Except 6CB69 Style

#### Removal and Installation

1. Remove front and rear door sill plates.
2. On hardtop styles, remove attaching screw securing center pillar trim panel to center pillar brace (Fig. 5-17). Then, remove trim from pillar by lifting straight-up to clear retaining flanges.
3. On closed styles, remove attaching screws securing upper trim to center pillar. To remove lower trim after upper trim has been removed, lift trim straight-up to clear retaining flanges on center pillar.
4. To install reverse removal operations.

### CENTER PILLAR UPPER AND LOWER TRIM - 6CB69 Style

#### Removal and Installation

1. Remove center pillar upper trim by gently prying serrated attaching nails from center pillar (Fig. 5-18).
2. Remove front and rear door sill plates.
3. Remove attaching screws from center pillar lower trim.
4. With flat-bladed tool, such as J-9886 or equivalent, carefully pry attaching clips from center pillar and remove lower trim.
5. To install, reverse removal procedure.

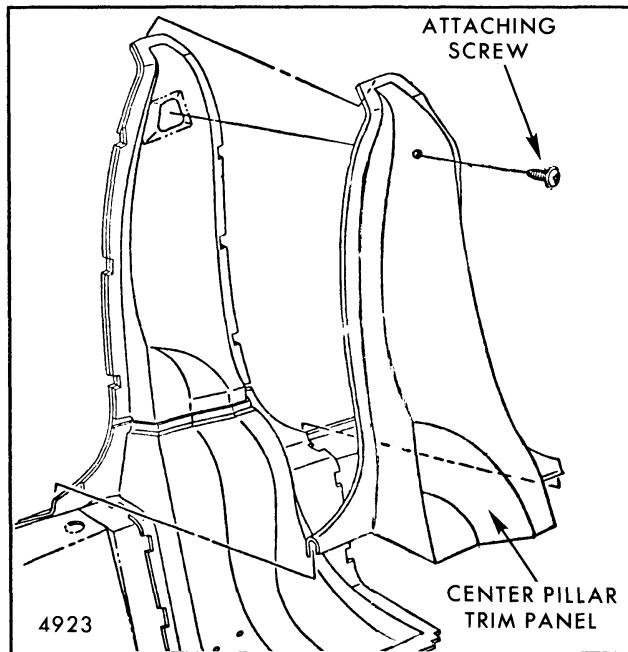


Fig. 5-17-Center Pillar Trim Attachment Hardtop Styles

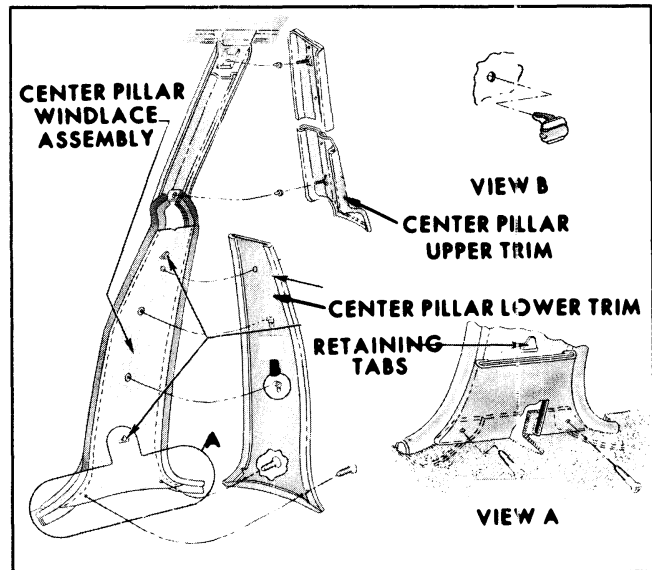


Fig. 5-18-Center Pillar Trim Attachment - Typical Installation

## FRONT AND REAR DOORS

### INTRODUCTION

This section of the manual contains the service operations that are necessary for the removal, installation, adjustment and sealing of door assemblies and individual door hardware components. The procedures are arranged in the sequence that they would be performed when servicing a door. To locate specific procedures, refer to the "Door Index".

Hardware items are divided into three categories. Those which are common to all doors are found under "Front and Rear Doors", which also includes door and side roof rail weatherstrips. Items which are peculiar to front or rear doors are found under "Front Doors" or "Rear Doors" respectively. In addition to these categories, the first portion of this section "Door Trim" includes removal procedures for all door trim items.

Body series or style references in the procedures are explained under "General Information" in Section 1 of this manual.

### FRONT AND REAR DOOR WEATHERSTRIPS

#### Description

Both the front and rear doors use nylon fasteners to retain the door weatherstrips. The fasteners are a component part of the weatherstrip and secure the weatherstrip to the door by engaging piercings in the

door panels. The serrations on the fastener retain the fastener in the piercing and also seal the openings from water entry (Fig. 5-19). On closed styles, nylon fasteners are used below the beltline only. Weatherstrip adhesive retains the weatherstrip around the door upper frame (Fig. 5-20). On all styles, in addition to the fastener, weatherstrip adhesive is used at the beltline and down the front door hinge pillar.

To disengage nylon fasteners from door panel piercings use tool J-21104 equivalent (Fig. 5-19). This tool permits removal of the weatherstrip without damaging the serrations on the fasteners so that the weatherstrip can be reinstalled if desired. Although a replacement door weatherstrip will include nylon fasteners, individual fasteners are also available as service parts.

#### Removal

1. On all hardtop and convertible styles, remove upper portion of door trim pad to gain access to weatherstrip fasteners hidden under trim assembly and remove fasteners (Fig. 5-21).
2. Use a flat-bladed tool to break cement bond between door and weatherstrip. A tool applicable to this usage can be fabricated from tool J-21104 or equivalent (Fig. 5-22). On all styles, weatherstrip adhesive is used for a distance of 3" on door lock pillar and the entire length of the front door hinge pillar (Fig. 5-20). In addition, on closed

styles, weatherstrip is retained by weatherstrip adhesive completely around door upper frame (Fig. 5-20).

3. On all styles, use tool J-21104 or equivalent to disengage weatherstrip from door where weatherstrip is retained by nylon fasteners.

### Installation

1. If previously removed weatherstrip is to be reinstalled, inspect nylon fasteners and replace those that are damaged.
2. Clean off old weatherstrip adhesive from door.
3. On closed styles, apply black weatherstrip adhesive around door upper frame (Fig. 5-20).
4. On styles without door upper frames, position weatherstrip to door and install plastic fasteners at front and rear ends of weatherstrip.
5. On styles with door upper frames, position weatherstrip to door as follows:
  - a. On front doors, locate weatherstrip from rear upper corner.
  - b. On rear doors, locate weatherstrip from molded front upper corner.
6. Tap nylon fasteners into door piercing using a hammer and blunt caulking tool.
7. After all fasteners have been installed on sedan styles, apply weatherstrip adhesive between door and weatherstrip outboard surface at the following locations:
  - a. For 5" around rear upper corner of front door upper frame and/or 9" down door lock pillar starting at beltline and down entire hinge pillar facing.
  - b. On sedan rear doors, 9" down both door lock pillar and door hinge pillars starting at beltline.

**CAUTION:** If weatherstrip becomes damaged at fastener location and will not retain fastener, remove fastener and secure weatherstrip to door with weatherstrip adhesive. If more than two consecutive fastener locations become damaged, replace weatherstrip.

Although weatherstrip adhesive is specified only at specific locations, it can be used at any point where additional retention or sealing is required.

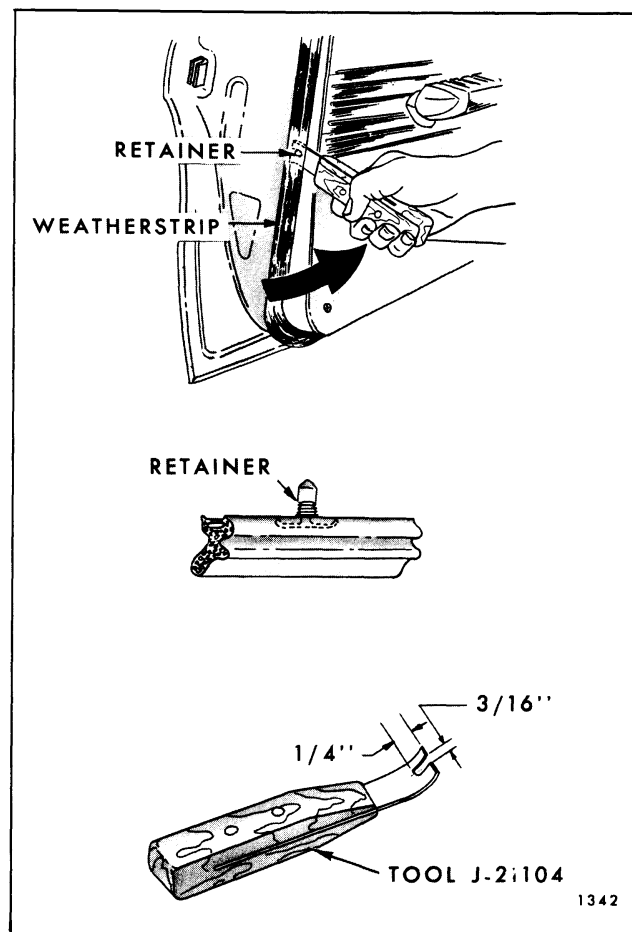


Fig.5-19-Door Weatherstrip Removal

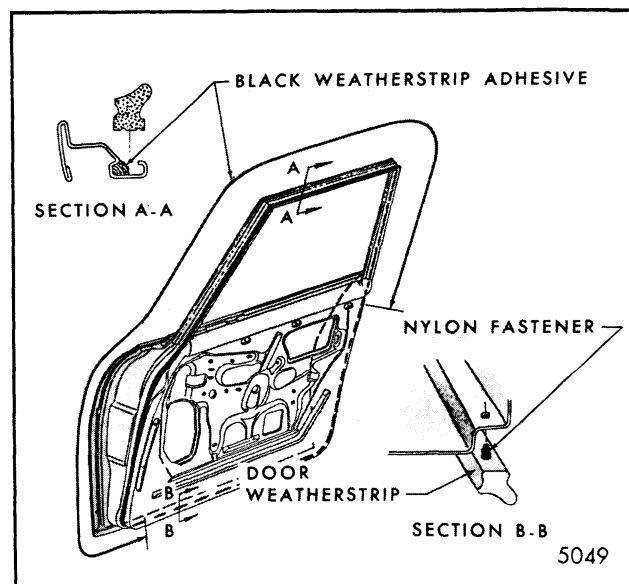


Fig. 5-20-Door Weatherstrip - All Styles

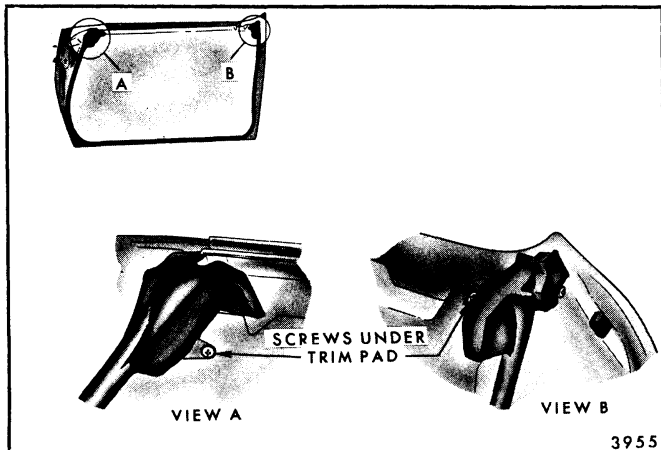


Fig. 5-21-Door Weatherstrip - Hardtop Styles

## FRONT AND REAR DOOR INNER PANEL WATER DEFLECTOR

### Description

Waterproof deflectors are used to seal the door inner panel and prevent entry of water into the body. The deflector is secured by a string-loaded sealing material along both front and rear edges and by the application of waterproof sealing tape at front and rear lower corners. Whenever work is performed on front or rear doors where the water deflector has been disturbed, the deflector must be properly sealed and taped to the inner panel to prevent waterleaks (refer to Fig. 5-23). For service sealing, body caulking compound or strip caulking is recommended if additional sealing material is required.

When access to the inner panel is required to perform service operations, the deflector may be completely

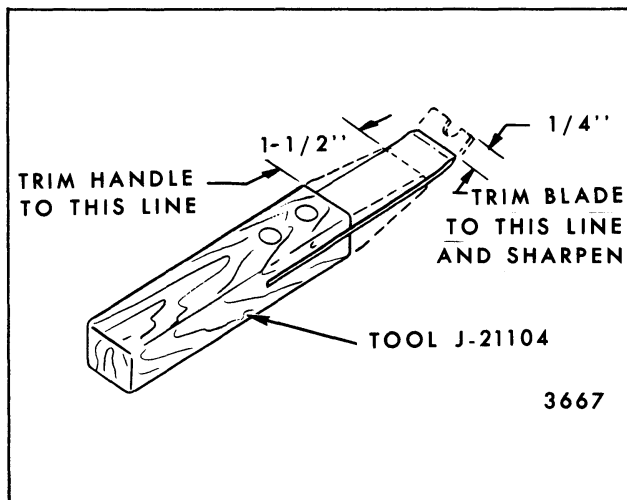


Fig. 5-22-Weatherstrip Removal Tool

or partially detached from the inner panel. If the existing water deflector is damaged so that it will not properly seal the door, replacement of the deflector is required. Water deflector roll stock is available as a service part.

The following procedure covers complete removal and installation of the water deflector. If only partial removal of the deflector is required, perform only those steps which are necessary to expose the required area of the door inner panel.

### Removal - Refer to Figure 5-23

1. Remove the door trim assembly.
2. Remove waterproof body tape securing top of water deflector to door inner panel.
3. Using a flat-bladed tool such as a putty knife, or side roof rail weatherstrip removal tool as described in Fig. 5-26, carefully break sealer bond between water deflector and door inner panel down both sides of deflector. Make certain tool blade is between inner panel and string that is embedded in sealer.
4. When seal has been broken down both sides of deflector, carefully remove tape from inner panel at lower corners of water deflector. Disengage water deflector from inner panel drain slot and remove deflector.

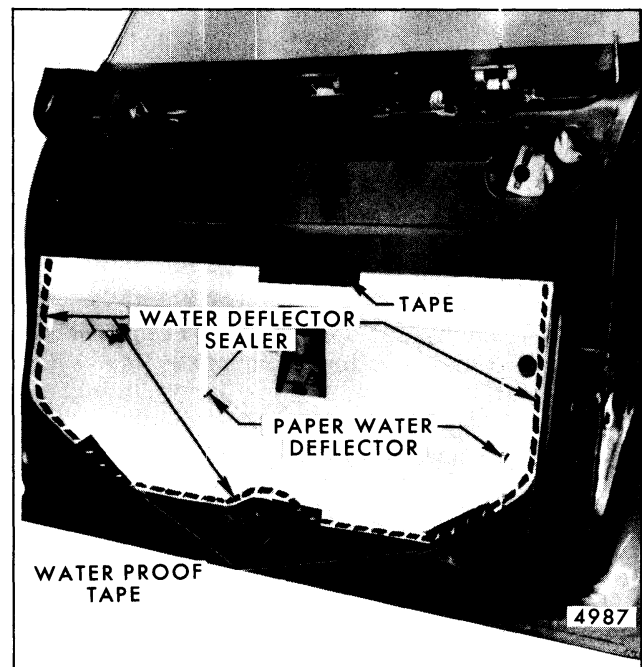


Fig. 5-23-Door Inner Panel Sealing

## Installation

1. Inspect water deflector and, where necessary, repair any tears or holes with waterproof body tape applied to both sides of deflector.
- 2. If a new deflector is to be installed, use old deflector as a template.
3. Position water deflector to door inner panel and insert lower edge of deflector in retaining slot. Then, firmly roll or press edges of deflector to obtain a good bond between deflector and door inner panel.

If old sealer does not effect a satisfactory seal, apply additional body caulking compound or strip caulking to inner panel at unsealed areas.

4. Seal lower corners of deflector by re-applying previously removed tape or new pieces of 2" or 2-1/2" waterproof body tape.
5. On styles with door inner panel hardware attachments that are below and outboard of water deflector, seal attaching bolt head and panel piercing with body caulking compound.

## DOOR WINDOW BELT SEALING STRIPS

### Description

Door window belt sealing strips are used to form a seal between the door inner and outer panels and the window at the beltline. The construction and attachment of these strips vary with the body style involved.

On styles with a door window belt reveal molding, the molding is either an integral part of the outer strip assembly, or an independent molding attached to the door outer panel. Refer to the "Exterior Moldings" section for specific molding attachment and removal procedures.

On styles which utilize the belt reveal molding and outer strip assembly (stapled together at manufacture), the entire assembly is available as a service part.

On most "B, C, E" and Pontiac "F" styles, the molding is installed over the outer sealing strip and must be removed prior to strip removal (moldings and outer sealing strips are serviced independently).

On styles without door window belt reveal moldings, the outer strip assembly is an independent part that is secured to the door outer panel return flange by clips, screws or rivets (rivets pertain to all "A and F" styles only).

**NOTE:** To remove strip assemblies, glass must be low enough to gain access to the attachments. In many cases, this will require removal or adjustment of window lower stop supports to permit further lowering of window assembly.

### Removal and Installation

1. On styles with screw retained strip assemblies, remove strip assembly by removing attaching screws.
2. On "X" body styles which utilize clip retained outer strip assemblies, remove strip assembly as follows:
  - a. Apply cloth-backed tape as a protective cover over painted surface of door outer panel adjacent to strip assembly.
  - b. Using a flat-bladed tool that is slotted to fit over tang of clip, disengage clips from slots in door panel return flange as shown in Figure 5-24.

**NOTE:** To fabricate strip assembly removal tool, make a 1/4" wide by 3/8" deep slot in a flat-bladed headlining inserting tool (tool J-2772 or equivalent).

- c. To install strip assembly, position strip so that the tangs of each clip starts into slot in door panel; then, engage clips by pressing downward. Prior to installation, re-form tangs on clip to assure positive retention when installed.
3. On "A and F" styles equipped with rivet retained strip assemblies, drill-out rivets. When installing new strip assemblies, use 1/8" diameter by 5/16" reach aluminum "pop" rivets or equivalent.

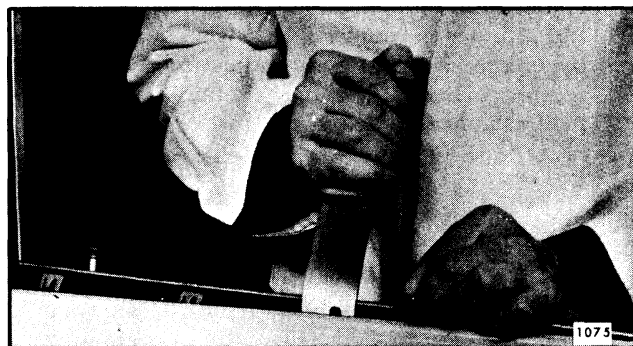


Fig. 5-24-Clip Retained Belt Sealing Strip Assembly Removal

## SIDE ROOF RAIL WEATHERSTRIP AND RETAINER

### Description

The side roof rail weatherstrip is sealed to a side roof rail weatherstrip retainer, (front and rear) which, in turn is secured with plastic fasteners at the front and rear edges, except on "B, C and E" two-door hardtop styles. The sealer that retains the weatherstrip also protects against air noise and water entry between the retainer and weatherstrip. An integral section of closed cell nitrile foam material bonded to the weatherstrip retainers during retainer manufacture prevents water entry between the retainer and side roof rail or body lock pillar above belt (Item 1, Fig. 5-25).

### Side Roof Rail Weatherstrip (Retainer) Adjustment

The side roof rail weatherstrip can be adjusted either inboard or outboard to obtain a better seal with the door or quarter window by repositioning the weatherstrip retainer:

1. Remove the weatherstrip from the retainer as subsequently described and loosen retainer attaching screws.
2. Adjust retainer inboard or outboard as required and replace screws. Reinstall weatherstrip and seal with a "pumpable" sealer.

For proper relationship of weatherstrip to door window, refer to "Front Door Window Adjustments".

**NOTE:** Major retainer adjustments will require resealing retainer to body at upper corners of retainer(s), and full length of rear body lock pillar retainer on "A" four-door styles, as described in Step 2 of weatherstrip installation procedure ("2", Fig. 5-25).

If additional inboard or outboard adjustment of the retainer is required, it can be accomplished by either elongating the adjusting slots in the retainer or repositioning the retainer and drilling new attaching holes in the rail or pillar assembly.

### Removal - All Styles

1. Remove plastic fasteners at front and rear of side roof rail weatherstrip (Fig. 5-25 is typical of all styles at front hinge pillar) with tool J-21104 or equivalent.

2. Beginning at the front body hinge pillar, carefully pull weatherstrip out of retainer while breaking sealer bond between weatherstrip and retainer with a flat-bladed tool. A tool for this use can be fabricated from tool J-21104 or equivalent by trimming 1/4" from the blade and 1-1/2" from the handle, then filing a sharp edge on the blade. Figure 5-26 illustrates fabrication of this tool.

**CAUTION:** This operation must be performed carefully to prevent damaging side roof rail weatherstrip.

3. With weatherstrip removed, screws securing weatherstrip retainer to side roof rail are exposed. Mark position of retainer on rail or pillar and remove screws from retainer.

### Installation (All Styles)

1. Scrape off any excess sealer from weatherstrip retainer.
2. Apply a continuous bead of a "pumpable" type body caulking compound 4" rearward and 4" down from front and rear upper corner of retainer that mates with side roof rail, and along full length of rear body lock pillar retainer on "A" four-door styles ("2", Fig. 5-25). Apply bead outboard of attaching screw holes.
3. Position retainer to body and install attaching screws.
4. Apply a continuous bead of "pumpable" sealer to inboard flange of weatherstrip retainer ("3", Fig. 5-25). Then, apply black weatherstrip adhesive to the front and rear end details of the side roof rail weatherstrip.
5. Position front end of weatherstrip to body and install plastic fasteners. Then, using a flat-bladed tool, engage weatherstrip with retainer, inboard lip first, then, outboard lip (refer to Sections "A-A", "B-B" and "C-C", Fig. 5-25).

**NOTE:** Replacement plastic fasteners are available as a service part.

6. After weatherstrip has been installed along length of retainer, install plastic fastener at rear end of weatherstrip on styles so equipped.

## SPRING CLIPS

### Description

Spring clips are used to secure remote control connecting rods and inside locking rods to door lock



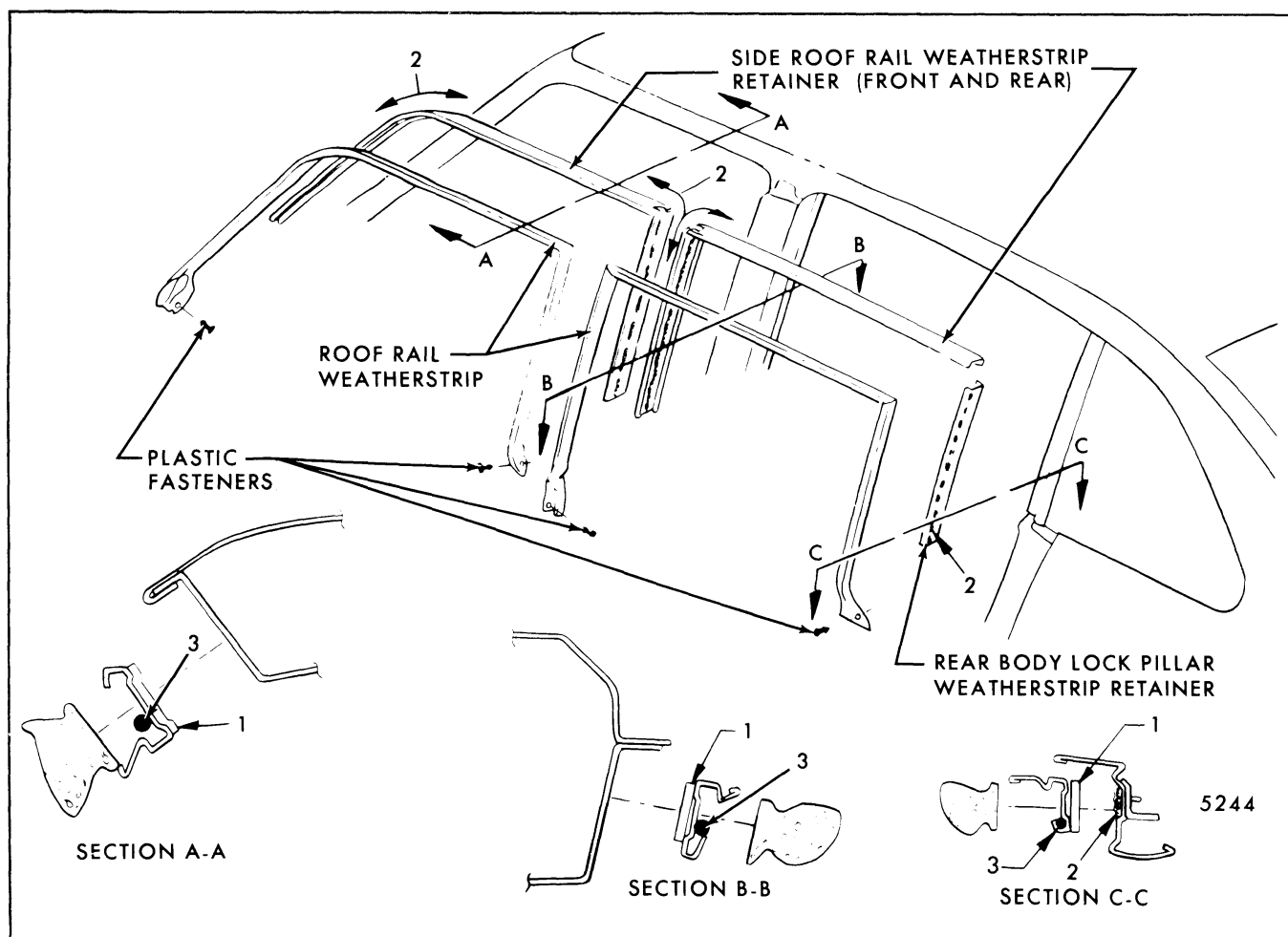


Fig. 5-25-Side Roof Rail Weatherstrip and Weatherstrip Retainer - "A" Four-Door Styles Shown, Other Styles Similar

levers and door outside handle push rods to door outside handle. A slot in the clip provides for disengagement of the clips, thereby facilitating detachment of linkage.

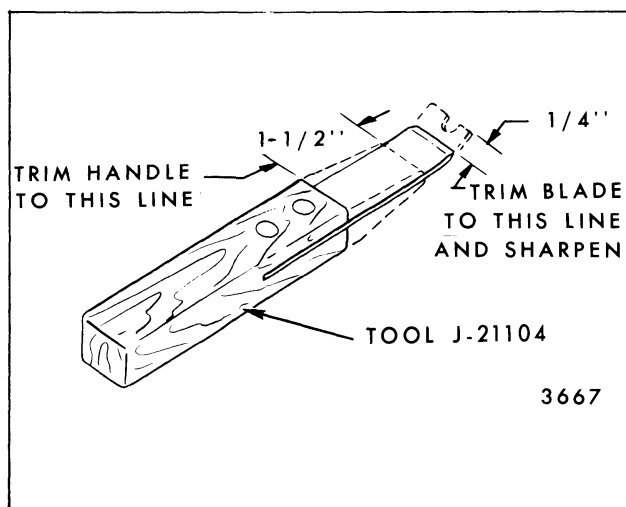


Fig. 5-26-Weatherstrip Removal Tool

### Removal and Installation

To disengage a spring clip, use a screwdriver, or other suitable thin bladed tool, to slide clip out of engagement as shown in Figure 5-27. To install, reverse removal procedure.

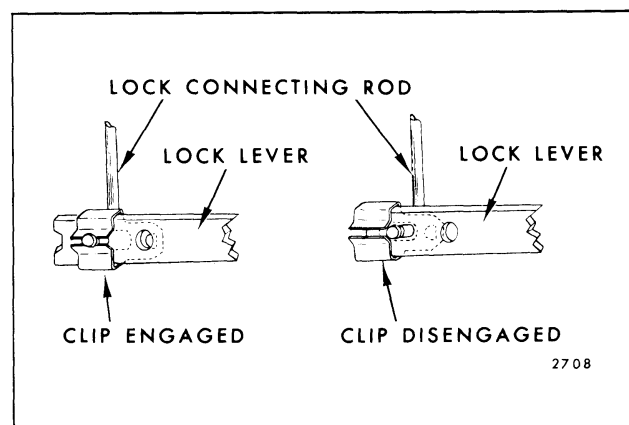


Fig. 5-27-Door Lock Spring Clip

## FRONT AND REAR DOOR OUTSIDE HANDLE ASSEMBLY - All Styles

### Description

There are three basic types of door outside handles: push-button; lift-bar and pull-out. However, the removal and installation procedure is similar.

### Removal and Installation - Refer to Figures 5-28, 5-29 and 5-30

1. Raise door window. Remove door trim assembly and detach upper rear corner of inner panel water deflector sufficiently to gain access to door outside handle attaching nuts.

**NOTE:** On "F" styles remove rear guide upper bracket to inner panel and guide assembly attaching bolts ("6" and "7", Fig. 5-50) and remove guide bracket from door. Then, working through access hole, disconnect door outside handle to lock push rod at handle assembly (Fig. 5-29).

2. On all other styles, remove handle attaching nuts (or screws) through access hole and remove door handle and gaskets from outside of body.
3. To install, reverse removal procedure.

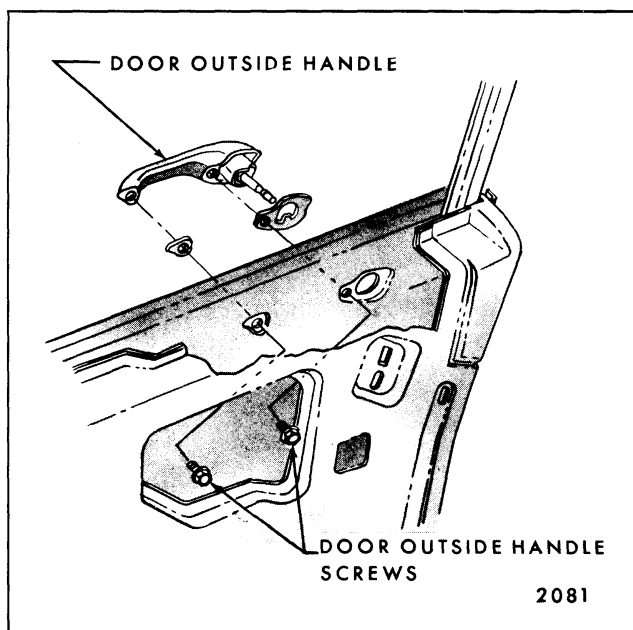


Fig. 5-28-Door Outside Handle Removal (Push-Button Type)

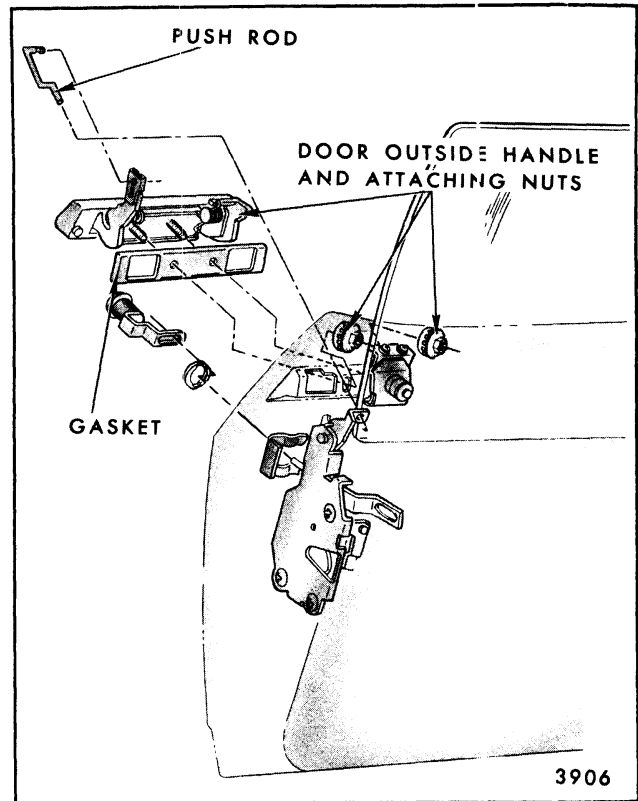


Fig. 5-29-Door Outside Handle Removal (Lift Bar Type)

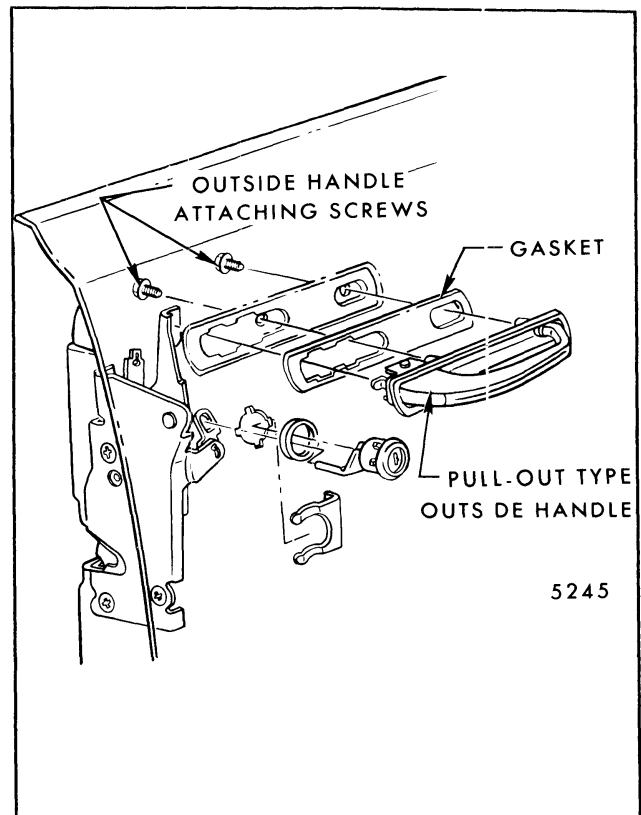


Fig. 5-30-Door Outside Handle Removal - (Pull-Out Type)

## DOOR OUTSIDE HANDLE DISASSEMBLY - ALL PUSH BUTTON TYPE HANDLE ASSEMBLIES

1. Remove door outside handle as previously described.
2. Depress retainer slightly and rotate 1/4 turn in either direction. Remove retainer, spring, push button and shaft and sealing washer from handle (refer to Fig. 5-31).

**NOTE:** "B and C" style rear door handle push buttons, springs and retainers are serviced as an assembly. The die case handle is serviced separately. Front door handle components are serviced separately as shown in Figure 5-31. Lift-bar and pull-out handles are serviced as an assembly.

3. To assemble, reverse disassembly procedure.

## FRONT AND REAR DOOR LOCK STRIKERS - All Styles

### Description

The front and rear door lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, floating cage plate located in the body lock pillar. With this design, the door is secured in the closed position when the door lock fork-bolt snaps-over and engages the striker bolt.

### Diagnosis of Alignment and Adjustments

1. To adjust striker up or down, or in or out, loosen

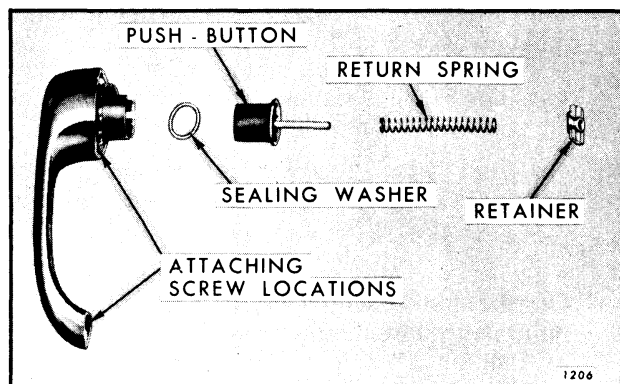


Fig. 5-31-Front Door Outside Handle - Push-Button Handles ("X" Styles Shown, "B-C" Styles Similar)

striker bolt and shift striker as required, then tighten striker.

2. To determine if striker fore or aft adjustment is required, proceed as follows:
  - a. Make certain door is properly aligned.
  - b. Apply modeling clay or body caulking compound to lock bolt opening as shown in Figure 5-32.
  - c. Close door only as far as necessary for striker bolt to form an impression in clay or caulking compound as shown in Figure 5-32.

**NOTE:** Do not close door completely. Complete door closing will make clay removal very difficult.

- d. Measure striker impressions as follows: Striker head should be centered fore and aft as shown, however, some tolerances are allowed. In any alignment, it is important that minimum dimensions, as outlined in Figure 5-32 be strictly maintained. The following spacers are available as service parts and can be used individually or in combination to achieve the desired alignment.



Fig. 5-32-Lock to Striker Engagement

1. 5/64" spacer - Part **4469196** or equivalent ("F and X" styles)
2. 5/64" spacer - Part **9827154** or equivalent ("A, B, C and E" styles)
3. 5/32" spacer - Part **4469197** or equivalent ("F and X" styles)
4. 5/32" spacer - Part **9827155** or equivalent ("A, B, C and E" styles)
5. 1/4" spacer - Part **4469194** or equivalent ("F and X" styles)
6. 5/16" spacer - Part **4469195** or equivalent ("F and X" styles)

### Removal and Installation

1. Mark position of striker on body lock pillar using a pencil.
2. Insert tool J-23457, BT-7107 or equivalent into the star shaped tool recess in the head of the striker bolt and remove striker (refer to Fig. 5-33).
3. To install, reverse removal procedure. Make certain striker is positioned within pencil mark. If striker is positioned outside of pencil marks, touch-up any exposed unpainted surface on lock pillar adjacent to striker assembly. Torque striker bolt 34-46 foot pounds.

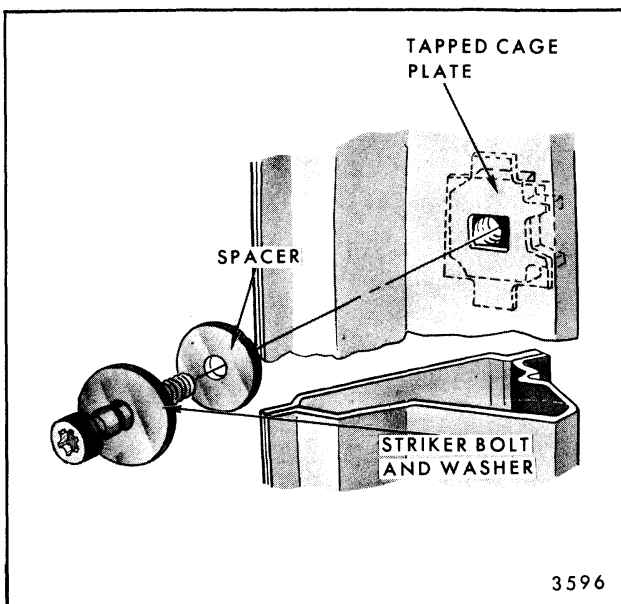


Fig. 5-33-Door Lock Striker Installation

**WARNING:** THE DOOR LOCK STRIKER IS AN IMPORTANT ATTACHING PART IN THAT IT COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS, AND/OR COULD RESULT IN MAJOR REPAIR EXPENSE. IT MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THIS PART.

**CAUTION:** Whenever a door has been removed and reinstalled or realigned, the door should not be closed completely until a visual check is made to determine if lock fork-bolt will correctly engage with striker.

### ELECTRIC DOOR LOCK SOLENOID

#### Theory of Operation

The optional electric door lock system incorporates a solenoid for each door and a control switch for each front door, except "F" styles, which is operated by a switch located on the instrument panel. All doors lock and unlock simultaneously from the control switch(s) or manually from each door in the conventional manner. Each solenoid has an internal circuit breaker which (under extreme conditions) may require up to three minutes to reset. The door harness is routed in the power window harness conduit.

#### Removal and Installation

1. Raise door window, remove trim pad and detach inner panel water deflector.
2. Disconnect wire harness from solenoid.
3. On front doors, remove lock pillar attaching screws, disconnect rod and remove through access hole (Fig. 5-34).
4. On rear doors, remove electric solenoid to door inner panel attaching screws and connecting rod to door inside locking rod connecting link attaching clip. Remove through access hole (Fig. 5-35).
5. To install reverse removal procedure.

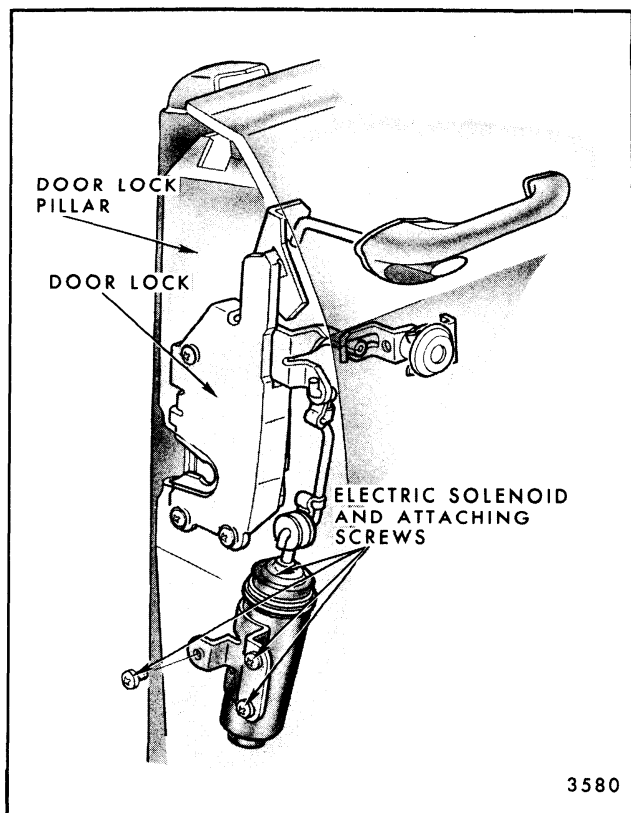


Fig. 5-34-Front Door Lock Electric Solenoid Installation

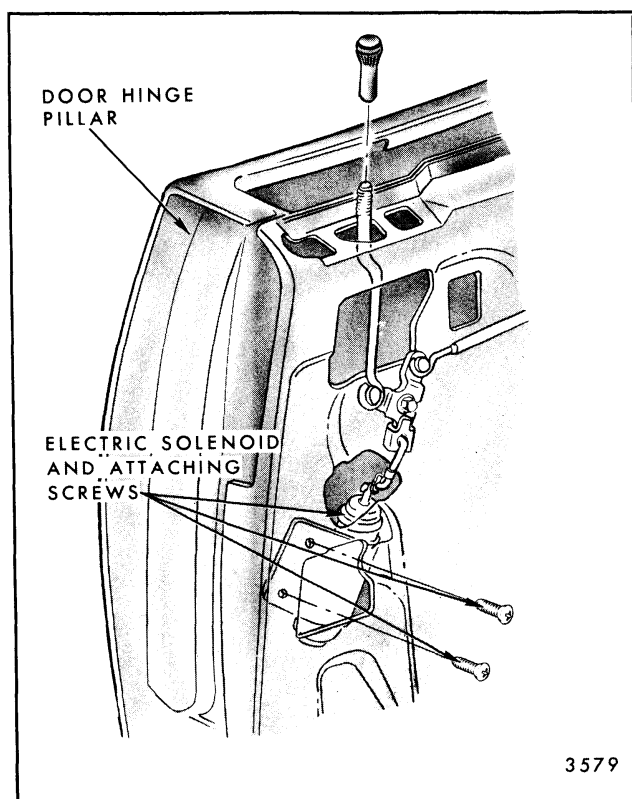


Fig. 5-35-Rear Door Lock Electric Solenoid Installation "B"  
Styles Shown, "A" Styles Similar.

## DOOR WINDOW REGULATOR ELECTRIC MOTOR

### Theory of Operation

The optional power operated window system incorporates an electric motor and an independent control switch for each door and quarter window, except drivers door. The drivers door incorporates an electric motor and a master window control switch (four button) permitting window operation of all windows from drivers position. Cadillac styles incorporate a window blockout (cut out) switch which permits normal operation of power windows from all switch locations when the blockout switch located on the left front door armrest is in the normal (on) position. When the blockout switch is in the lock position, the windows will operate only from the master control switch.

The electric motor assembly, which powers the electrically operated window regulators, is a twelve volt reversible direction motor with an internal circuit breaker and a self-locking gear drive. The motor is secured to the regulator assembly with bolts.

### Removal and Installation - All Styles Except "A" Body-Front Doors

1. Remove door trim assembly and inner panel water deflector. Disconnect harness connector at motor.
2. Refer to Figures 5-35A, 5-36 and 5-37 and select the appropriate template for locating window motor to regulator attaching bolts by using window regulator to door inner panel attaching bolts as reference points.
3. Align regulator bolt locations, specified on template with appropriate regulator attaching bolts on door. Secure template in place with a piece of tape.
4. Using a center punch, dimple the door inner panel at the center of each of the 3/4" holes to be drilled as indicated on the template.
5. Using a 3/4" hole saw, drill three 3/4" motor to regulator attaching bolt access holes as indicated.
6. Remove motor attaching bolts and remove motor through access hole.

**NOTE:** Although window regulator lift arm is under tension of counterbalance spring, weight of window assembly prevents lift arm from moving. If necessary, window can be moved manually to clear access holes.

ALIGN TEMPLATE USING REFERENCE POINTS "I, II, OR III"  
WITH REGULATOR LOWER ATTACHING BOLTS ON DOOR

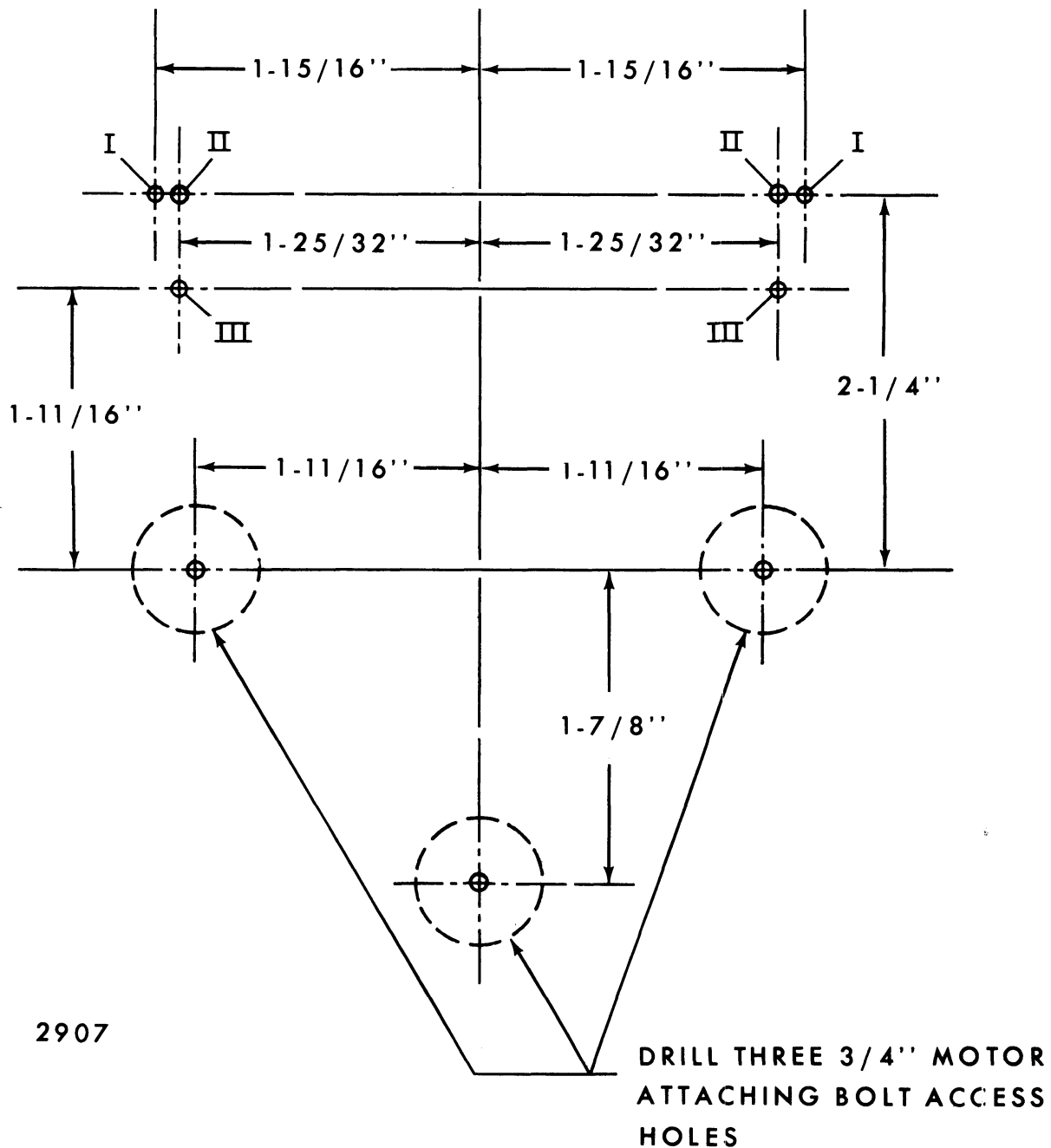


Fig. 5-35A-Window Regulator Lower Attaching Bolts Reference Points for Locating Window Motor to Regulator Attaching Bolts: "I" for "B, C and E-37, 47, 57 and 67" Style Front Doors; "II" for "C-69" Style Rear Doors; "III" for "B-36, 39, 46 and 69" and "C-49 and 69" Style Front and Rear Doors (Full Page)

ALIGN TEMPLATE WITH APPROPRIATE REGULATOR  
LOWER ATTACHING BOLTS ON DOOR

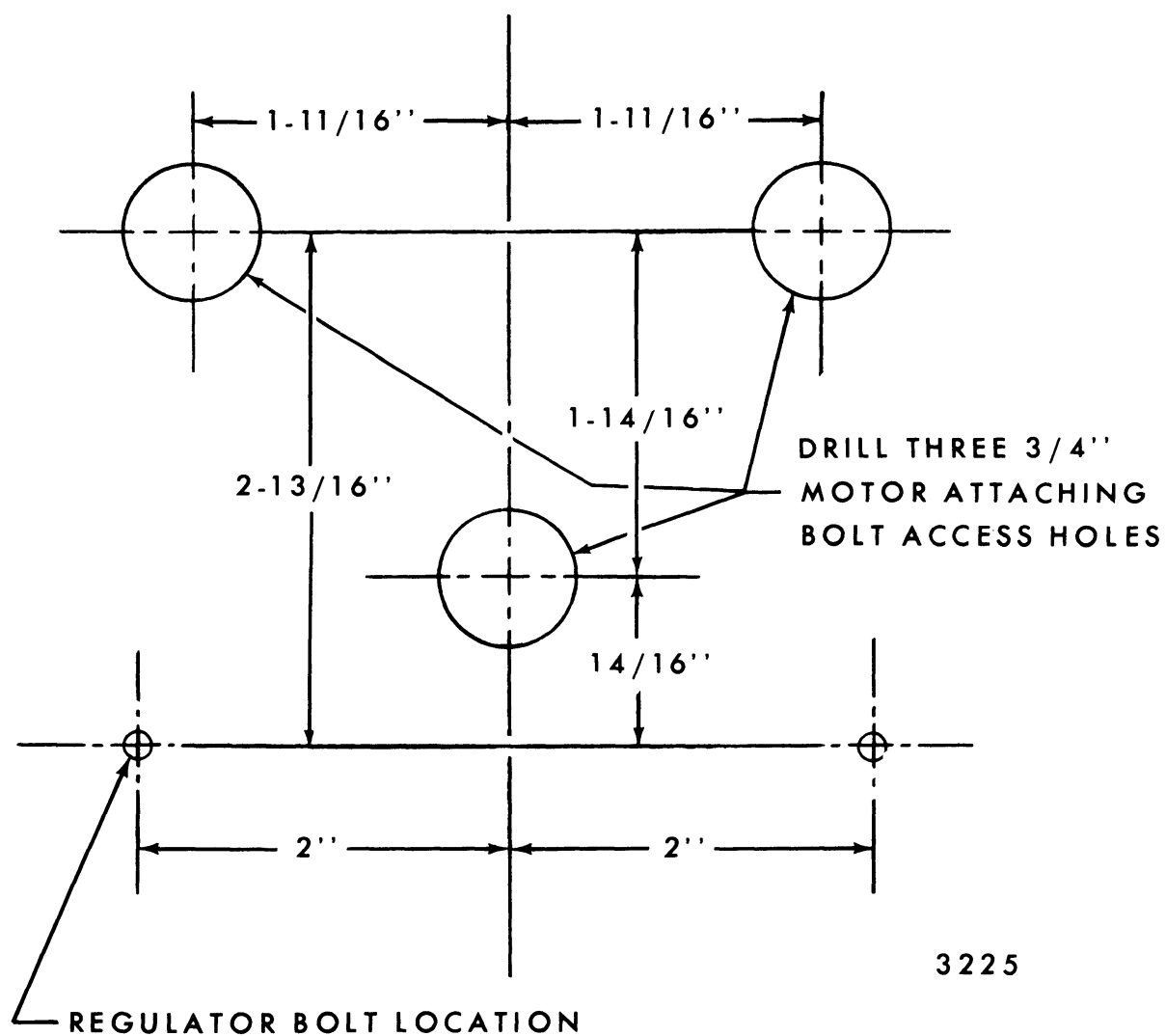


Fig. 5-36-Window Regulator Lower Attaching Bolt Reference Points for Locating Window Motor to Regulator Attaching Bolts - "F" Styles (Full Page)

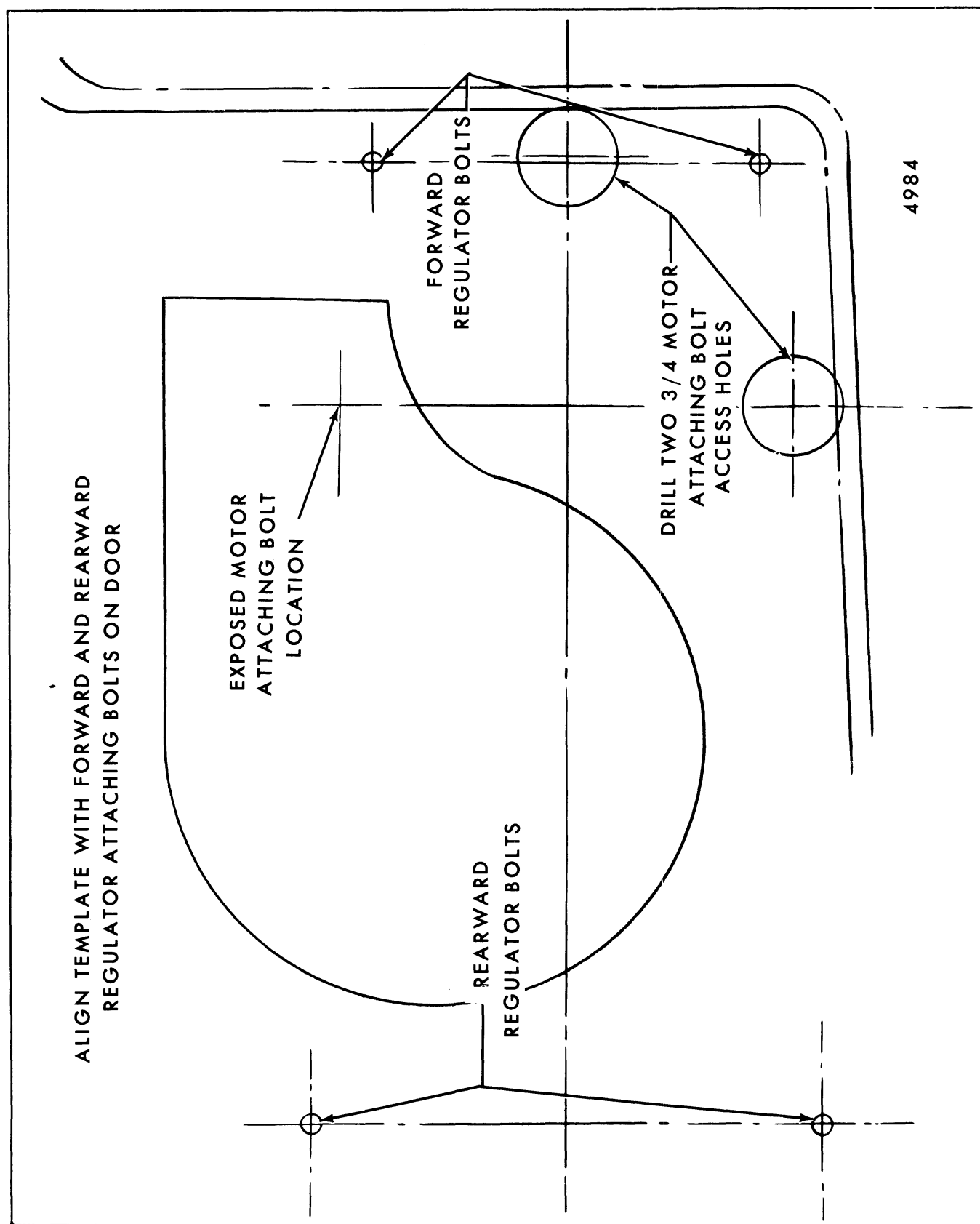


Fig. 5-37-Window Regulator Lower Attaching Bolt Reference Points for Locating Window Motor to Regulator Attaching Bolts -  
"A-29,35" Styles-Rear Door



7. After replacing motor and prior to trim installation, apply waterproof tape to seal any motor bolt access hole that is outside of the sealing area of the water deflector.

### Removal and Installation - All "A" Body Styles-Front Door

**NOTE:** All "A" body front door electric motors are bolted to the window regulator from the outboard side. Motor removal must therefore be performed as a bench operation after window regulator removal.

1. Remove window regulator as described in the "Front Door" section of this manual.
2. In process of removal, lift regulator to gain access to motor harness, and disconnect harness.

**WARNING:** STEP 3 MUST BE PERFORMED WHEN REGULATOR IS REMOVED FROM DOOR. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE SERIOUS INJURY IF THE MOTOR IS REMOVED WITHOUT LOCKING THE SECTOR GEAR IN POSITION.

3. Drill a 1/8" hole through the regulator sector gear and back plate (Fig. 5-38) DO NOT drill hole closer than 1/2" to edge of sector gear or back plate. Install a pan head sheet metal tapping screw (No. 10-12 x 3/4) in drilled hole to lock sector gear in position.
4. Remove regulator motor attaching screws and remove motor assembly from regulator.
5. Prior to installation, lubricate the motor drive gear and regulator sector teeth.

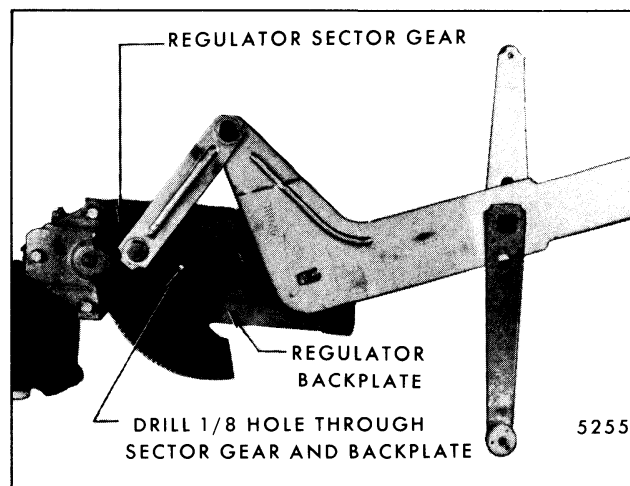


Fig. 5-38-Front Door Window Regulator Motor Removal

**NOTE:** The lubrication used must be cold weather approved to a minimum of minus 20 degrees fahrenheit.

6. Install regulator motor to regulator. Make sure the motor pinion gear teeth mesh properly with the sector gear teeth before installing the three motor attaching screws.
7. Remove screw locking sector gear in a fixed position.
8. Insert regulator into door in such a position that motor connector can be installed onto motor.
9. Reinstall regulator into door.

### DOOR HARDWARE LUBRICATION

The Mechanical components of the door assembly are lubricated during assembly. If additional lubrication is required to any door hardware mechanism, lubricate with Fisk Bros. No. 777 Lo -Temp Lubriplate or equivalent.

## FRONT DOORS

### DESCRIPTION

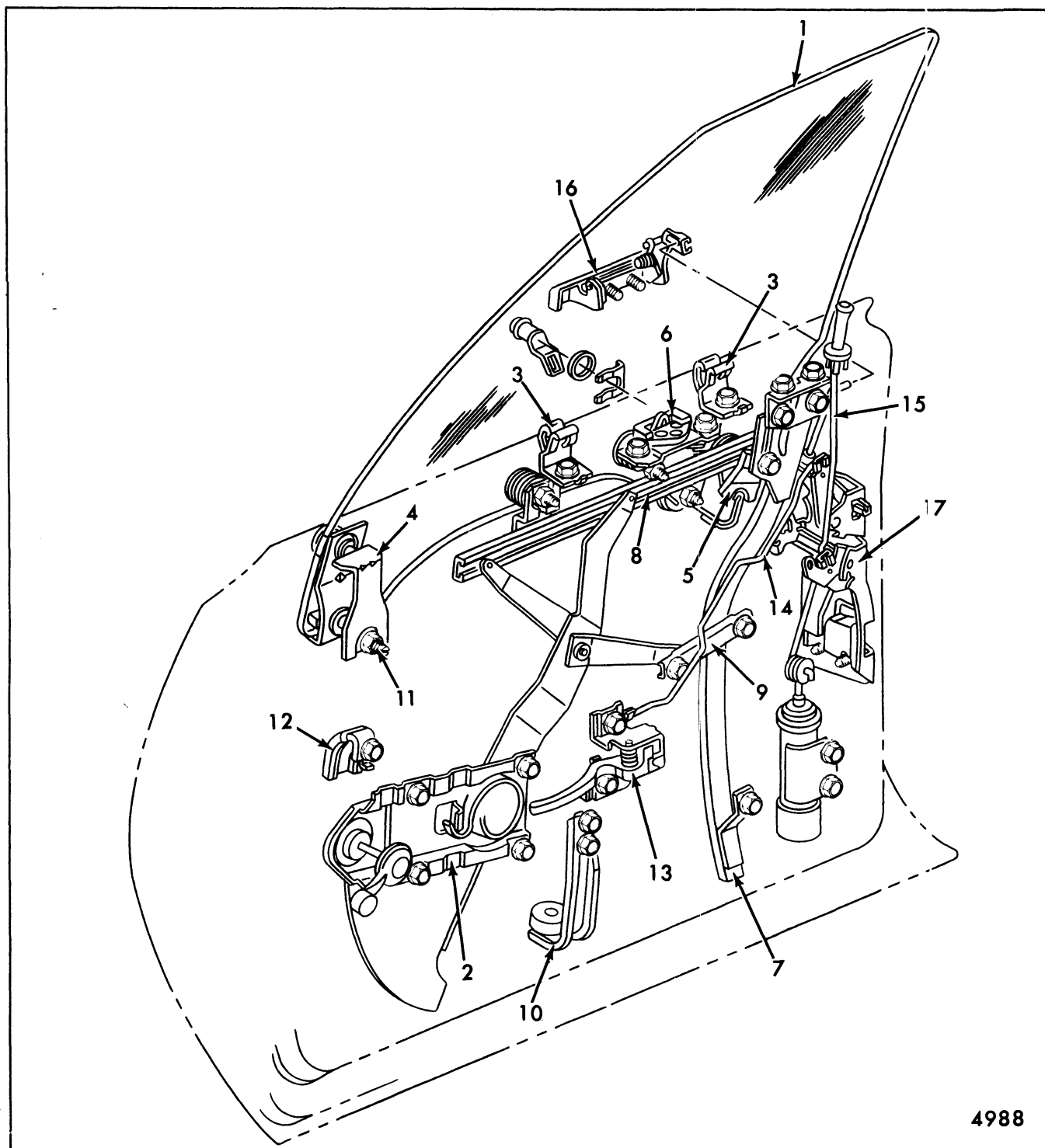
All doors fall into two basic categories, closed styles (those with door upper frames) and hardtop or convertible styles (those without door upper frames). Although both types of front doors utilize similar hardware, the presence or lack of a door upper frame usually determines the removal or installation sequence of any particular part.

Any work performed on door hardware usually requires removal of trim pad and inner panel water

deflector. The procedures for water deflectors and trim are covered in the preceding "Front and Rear Doors" and "Door Trim" sections.

Unless otherwise stated, the front door service procedures listed here pertain to all body styles.

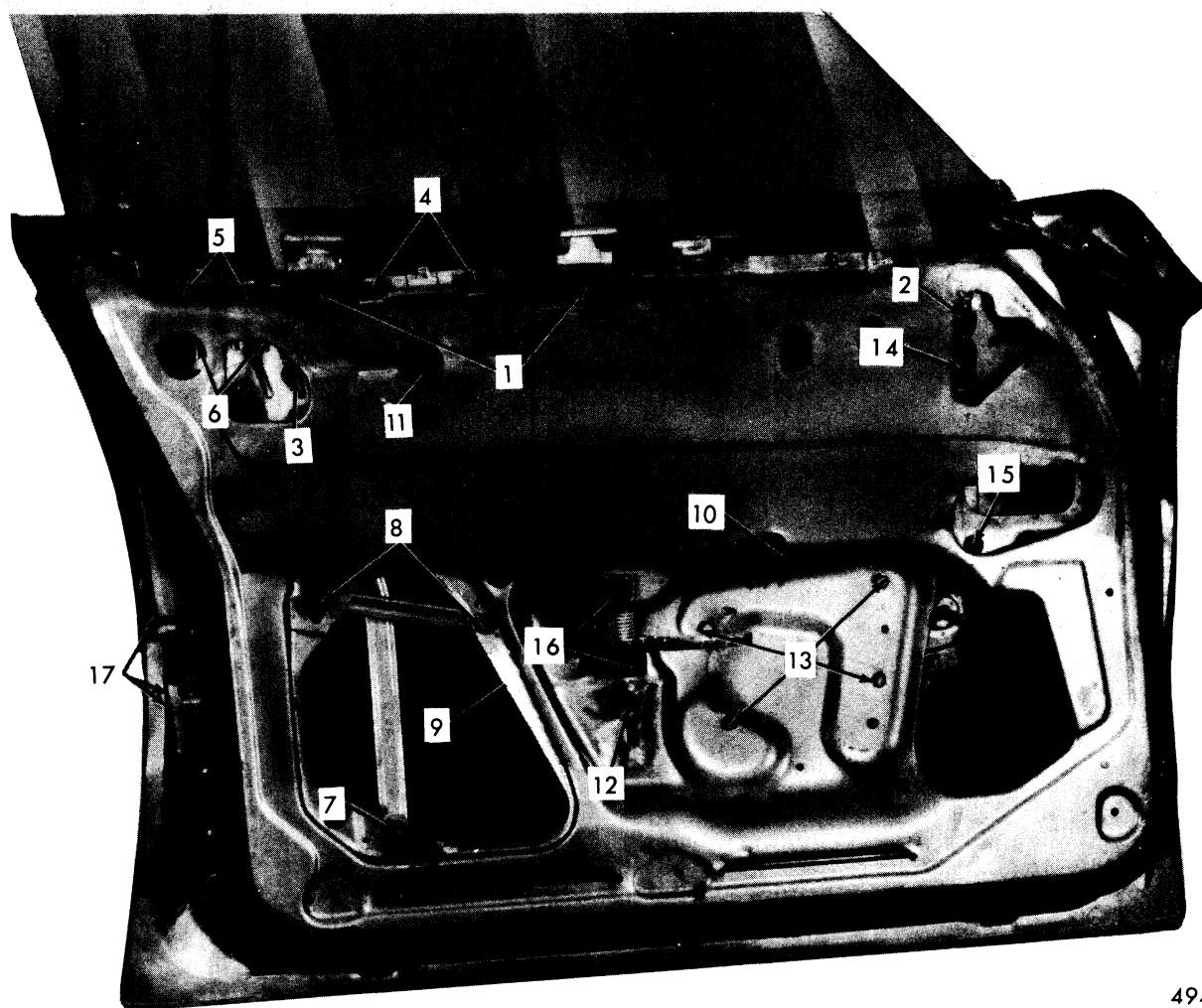
Figures 5-39 through 5-54 are typical of front doors with the trim assembly and inner panel water deflector removed. These figures identify the component parts of the front door assembly (by style), and various attaching points.



4988

Fig. 5-39-Front Door Hardware - "A-29, 35" Styles

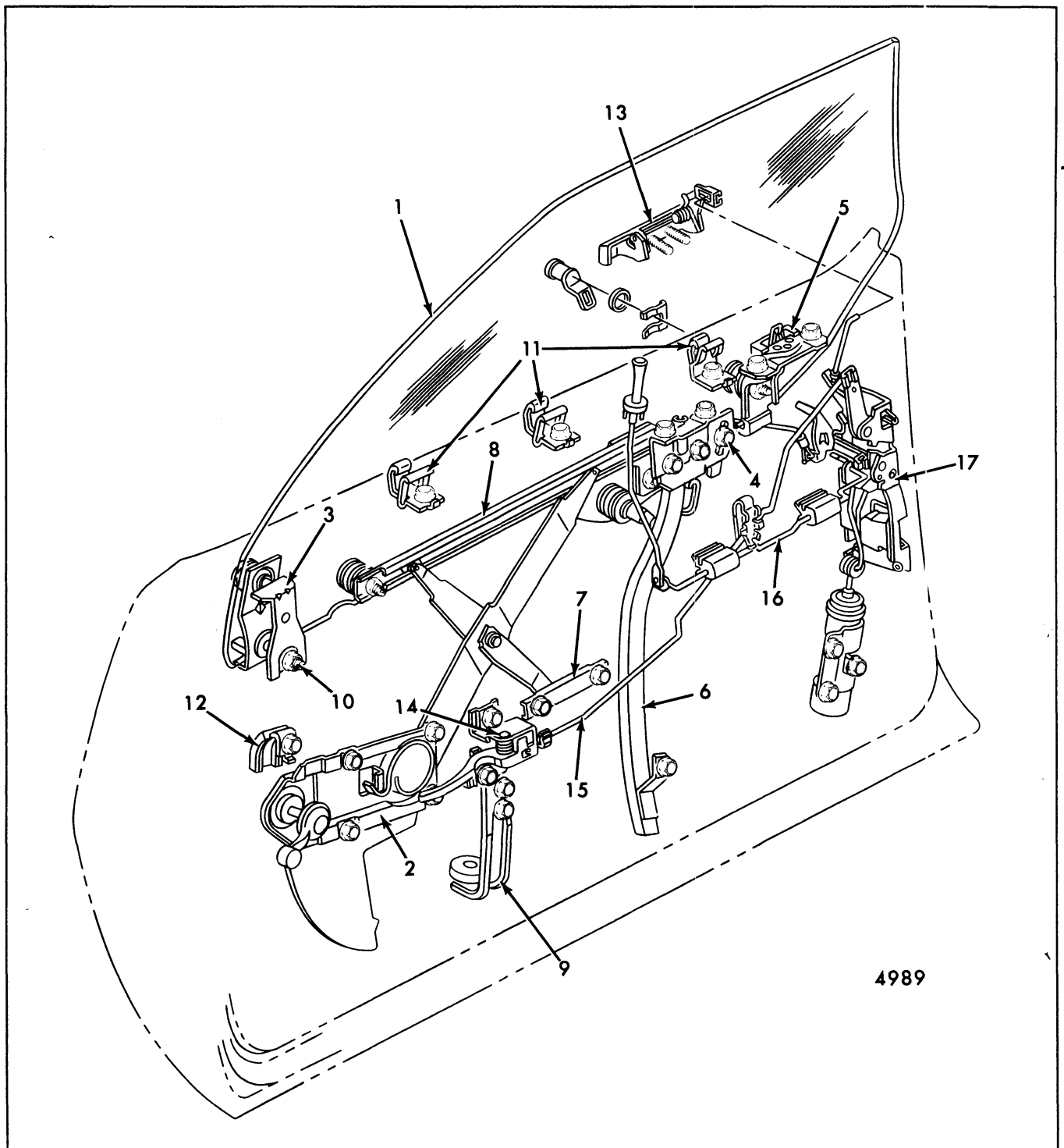
- |                                |   |   |   |
|--------------------------------|---|---|---|
| 1. Front Door Window Assembly  | 6. Stabilizer Guide Assembly (On Inner Panel) | 9. Inner Panel Cam                          | 13. Door Lock Remote Control Handle       |
| 2. Window Regulator            | 7. Rear Guide and Upper Attaching Bracket     | 10. Down-Travel Support and Bumper          | 14. Remote Control to Lock Connecting Rod |
| 3. Belt Trim Support Retainers | 8. Lower Sash Channel Cam                     | 11. Glass Stabilizer Adjusting Stud         | 15. Inside Locking Rod                    |
| 4. Front Up-Travel Stop        |   | 12. Glass Stabilizer Plate (On Inner Panel) | 16. Outside Lift Bar Handle               |
| 5. Rear Up-Travel Stop         |   |   | 17. Door Lock                             |



4949

Fig. 5-40-Front Door Hardware - "A-29, 35" Styles

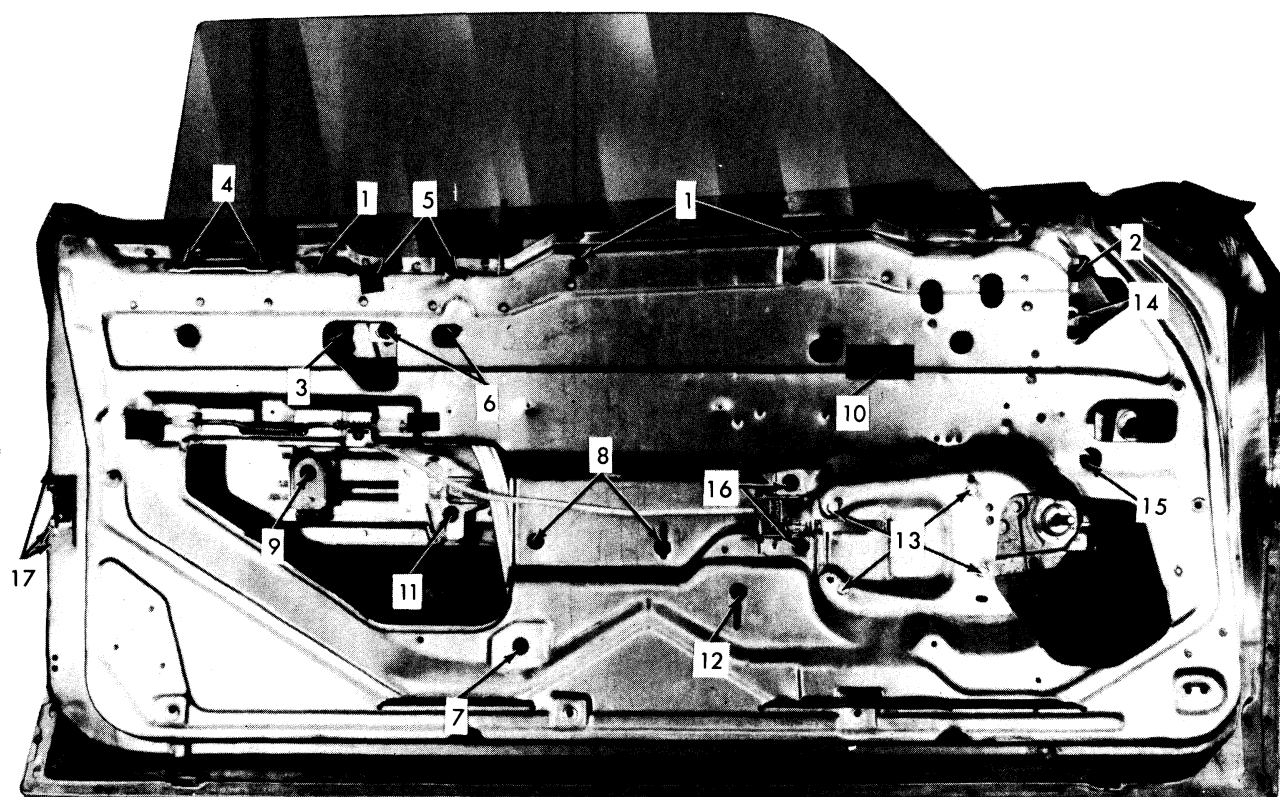
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|--|--|--|---|
| 1. Belt Trim Support Retainer Attaching Screws                 | 5. Rear Guide Upper Bracket Attaching Screws                     | 10. Lower Sash Channel Cam to Glass Forward Attaching Nut Access | 14. Glass Stabilizer Adjusting Stud                         |
| 2. Front Up-Travel Stop Attaching Screw                        | 6. Rear Guide Upper Attaching Screws                             | 11. Lower Sash Channel Cam to Glass Center Attaching Nut Access  | 15. Glass Stabilizer Plate (On Inner Panel) Attaching Screw |
| 3. Rear Up-Travel Stop Attaching Screw                         | 7. Rear Guide Lower Attaching Screws                             | 12. Down-Travel Support Attaching Screw                          | 16. Door Lock Remote Control Handle Attaching Screws        |
| 4. Stabilizer Guide Assembly (On Inner Panel) Attaching Screws | 8. Inner Panel Cam Attaching Screws                              | 13. Window Regulator Attaching Screws                            | 17. Door Lock Attaching Screws                              |
|  | 9. Lower Sash Channel Cam to Glass Rearward Attaching Nut Access |  |   |



4989

Fig. 5-41-Front Door Hardware - "A-37, 57 and 80" Styles

- |   |  |   |   |
|---|--|---|---|
| 1. Window Assembly                            | 6. Rear Guide and Upper Attaching Bracket Assembly | 10. Glass Stabilizer Adjusting Stud           | 13. Door Outside Lift Bar Handle          |
| 2. Window Regulator                           | 7. Inner Panel Cam                                 | 11. Belt Trim Support Retainers               | 14. Door Lock Remote Control Handle       |
| 3. Front Up-Travel Stop                       | 8. Lower Sash Channel Cam                          | 12. Glass Stabilizer Plate (On Reinforcement) | 15. Remote Control to Lock Connecting Rod |
| 4. Rear Up-Travel Stop                        | 9. Down-Travel Support                             |   | 16. Inside Locking Rod                    |
| 5. Stabilizer Guide Assembly (On Inner Panel) |  |   | 17. Door Lock Assembly                    |



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Fig. 5-42-Front Door Hardware - "A-37, 57 and 80" Styles

- |  |   |   |  |
|--|---|---|--|
| 1. Belt Trim Support Retainer Attaching Screws                 | 5. Rear Guide Upper Bracket Attaching Screws        | 10. Lower Sash Channel Cam to Glass Front Attaching Nut | 14. Glass Stabilizer Adjusting Stud                            |
| 2. Front Up-Travel Stop Attaching Screw                        | 6. Rear Guide Upper Attaching Screws                | 11. Lower Sash Channel Cam to Glass Rear Attaching Nut  | 15. Glass Stabilizer Plate (On Reinforcement) Attaching Screws |
| 3. Rear Up-Travel Stop Attaching Screw                         | 7. Rear Guide Lower Attaching Screw                 | 12. Down-Travel Support Attaching Screw                 | 16. Door Lock Remote Control Handle Attaching Screws           |
| 4. Stabilizer Guide Assembly (On Inner Panel) Attaching Screws | 8. Inner Panel Cam Attaching Screw                  | 13. Window Regulator Attaching Screws                   | 17. Door Lock Attaching Screws                                 |
|  | 9. Stabilizer to Glass Guide Assembly Attaching Nut |   |  |

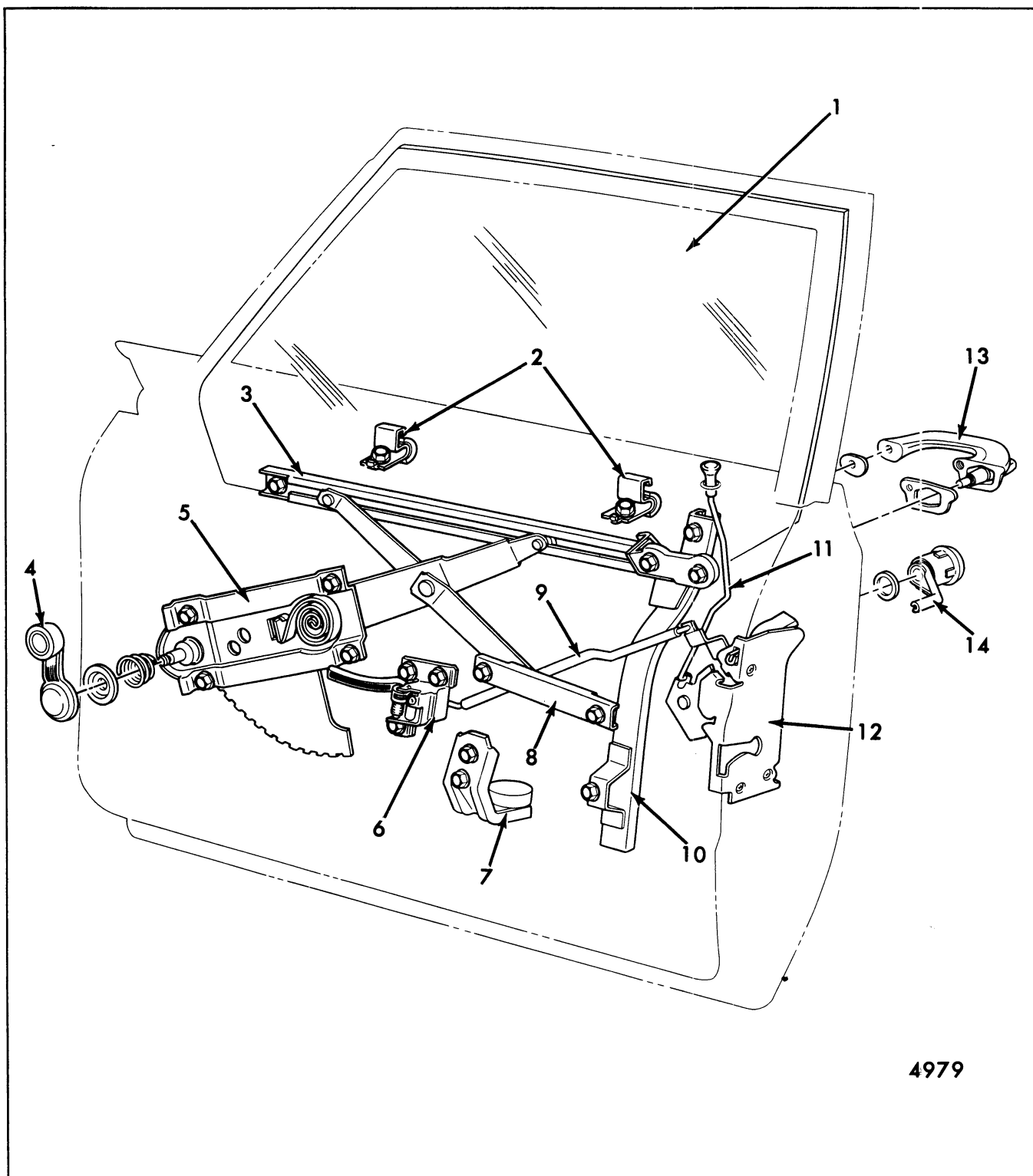
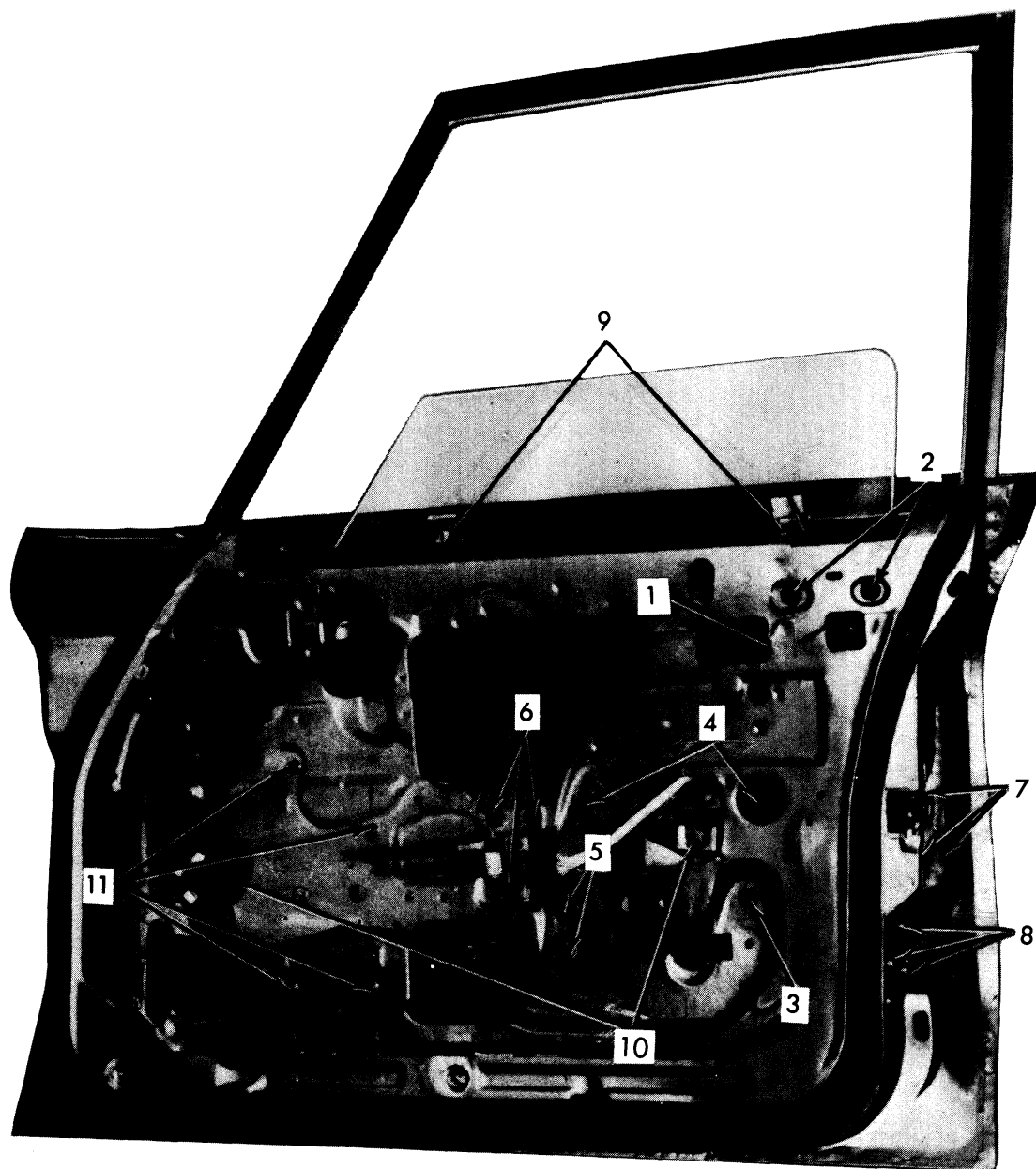


Fig. 5-43-Front Door Hardware - "B" Four-Door Closed Styles

- |                                |                                       |  |                         |
|--------------------------------|---------------------------------------|--|-------------------------|
| 1. Window Assembly             | 4. Window Regulator Handle            | 7. Window Down-Travel Support and Bumper | 10. Rear Guide Assembly |
| 2. Belt Trim Support Retainers | 5. Window Regulator                   | 8. Inner Panel Cam                       | 11. Inside Locking Rod  |
| 3. Lower Sash Channel Cam      | 6. Remote Control and Handle Assembly | 9. Remote Control to Lock Connecting Rod | 12. Lock Assembly       |
|                                |                                       |  | 13. Outside Handle      |
|                                |                                       |  | 14. Lock Cylinder       |



4980

Fig. 5-44-Front Door Hardware - "B" Four-Door Closed Styles

- |  |   |   |   |
|--|---|---|---|
| 1. Rear Guide to Guide Bracket Attaching Bolt        | 4. Inner Panel Cam Attaching Bolts                    | 7. Door Lock Attaching Screws                   | 10. Lower Sash Channel Cam STUD Nuts Access Holes |
| 2. Rear Guide Bracket to Inner Panel Attaching Bolts | 5. Window Down-Travel Support Bracket Attaching Bolts | 8. Door Lock Electric Solenoid Attaching Screws | 11. Window Regulator Attaching Bolts              |
| 3. Rear Guide Lower Attaching Bolt                   | 6. Door Lock Remote Control and Handle Assembly       | 9. Belt Trim Support Retainer Attaching Bolt    |   |

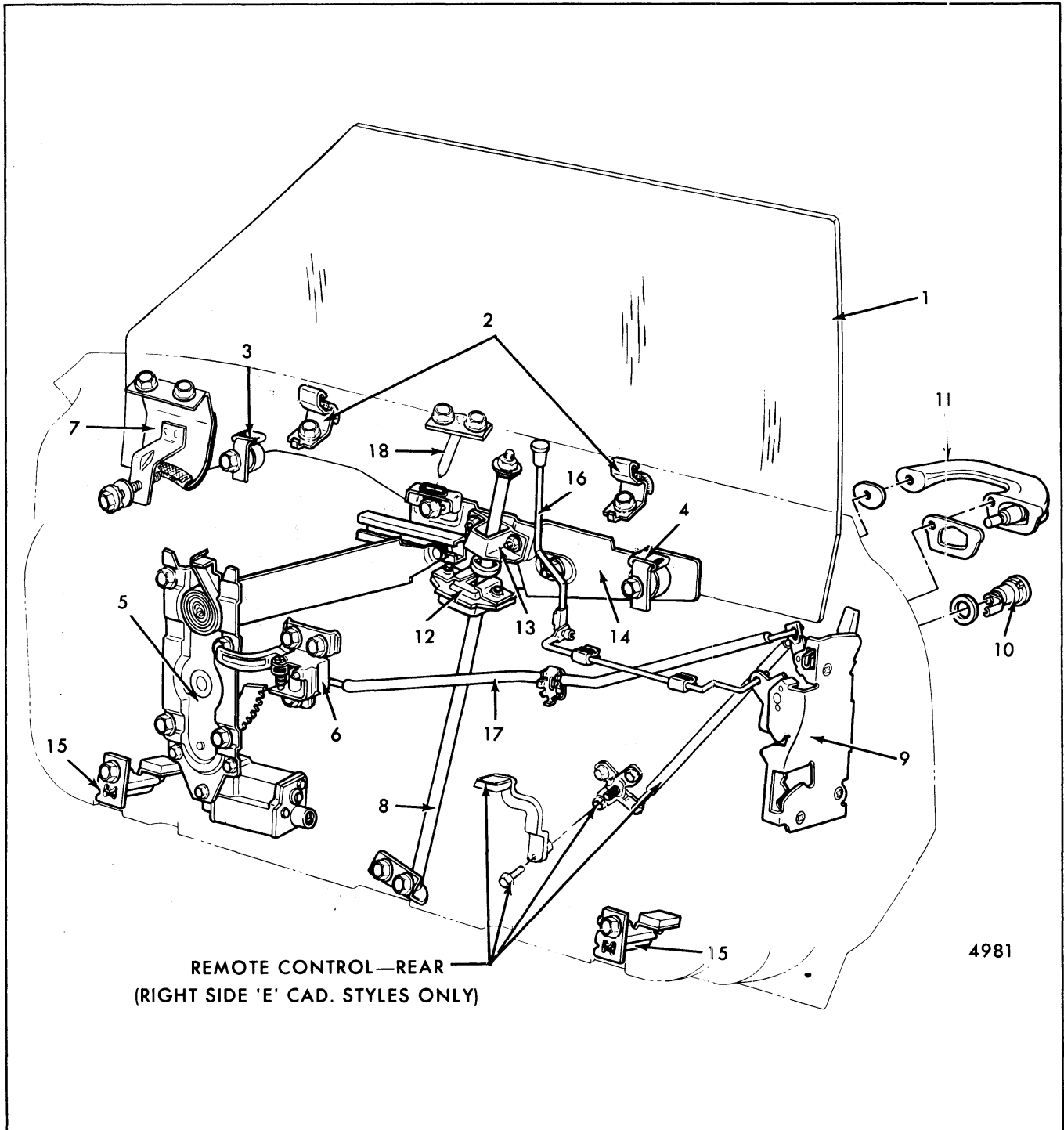


Fig. 5-45-Front Door Hardware - "B, C and E" Two-Door" Hardtop and Convertible Styles

- |                                |   |                                      |  |
|--------------------------------|---|--------------------------------------|--|
| 1. Front Door Window Assembly  | 5. Window Regulator Electric                    | 9. Door Lock                         | 15. Support, Window Bumper                       |
| 2. Belt Trim Support Retainers | 6. Door Lock Remote Control and Handle Assembly | 10. Door Lock Cylinder               | 16. Rod, Inside Locking                          |
| 3. Stop, Window Front Upper    | 7. Glass Bearing Plate                          | 11. Door Outside Handle              | 17. Rod, Remote Control to Lock                  |
| 4. Stop, Window Rear Upper     | 8. Tube Assembly, Window Guide                  | 12. Guide Assembly, Lower Sash Lower | 18. Guide Pin Stabilizer (On Belt Reinforcement) |
|                                |   | 13. Guide Assembly, Lower Sash Upper |  |
|                                |   | 14. Plate Assembly, Lower Sash Guide |  |



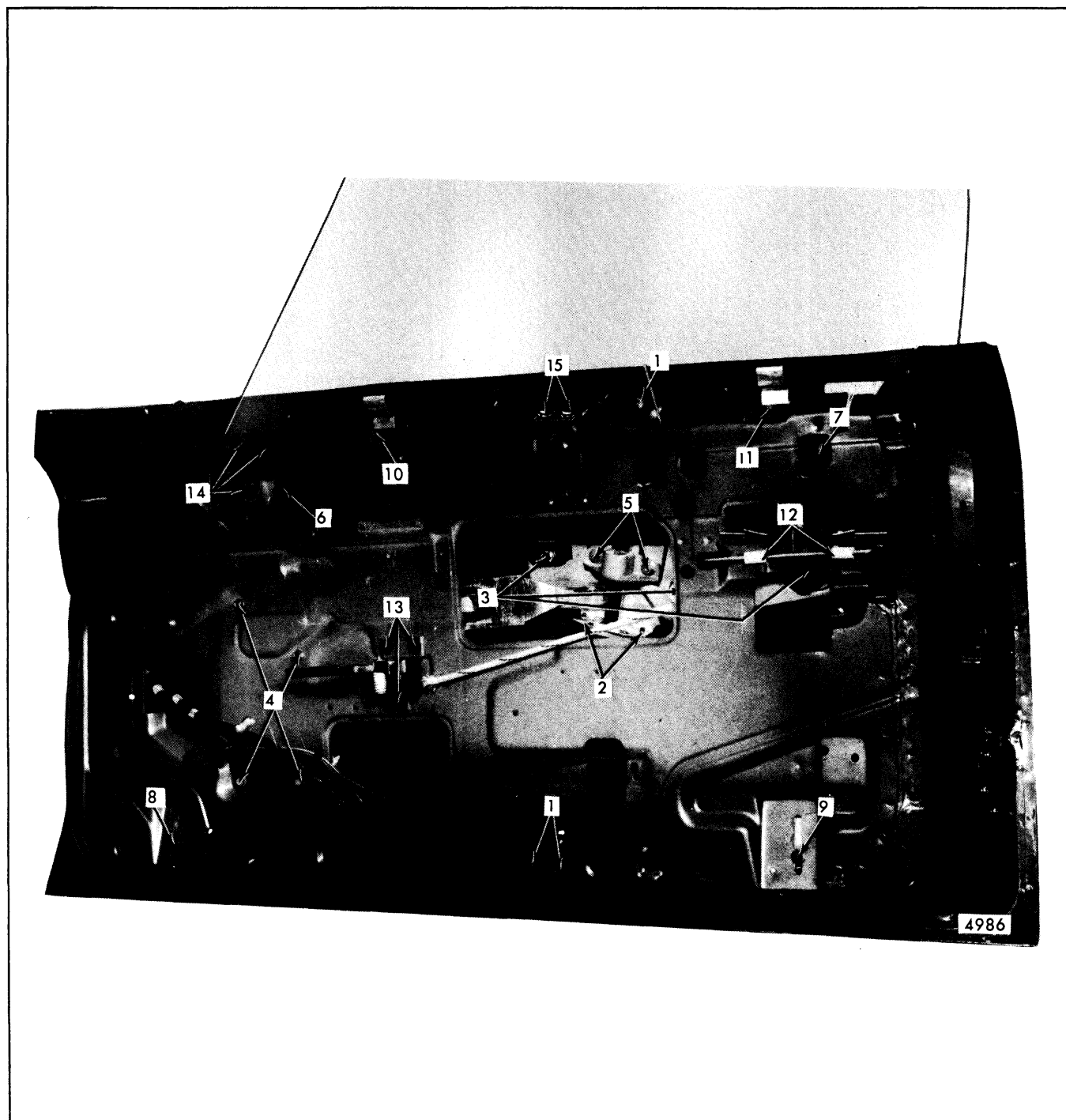


Fig. 5-46-Front Door Hardware - "B, C and E" Two-Door Hardtop and Convertible Styles

- |   |   |   |   |
|---|---|---|---|
| 1. Tube Assembly,<br>Window Guide<br>Attaching Bolts      | 5. Guide Assembly,<br>Lower Sash Upper<br>Attaching Bolts | 9. Support, Rear<br>Window Bumper<br>Attaching Bolt       | 13. Remote Control, Door<br>Lock Attaching Bolts                          |
| 2. Guide Assembly,<br>Lower Sash Lower<br>Attaching Bolts | 6. Stop, Front Up-Travel<br>Attaching Bolt                | 10. Front Belt Trim<br>Support Retainer<br>Attaching Bolt | 14. Glass Bearing Plate<br>Attaching Bolts                                |
| 3. Plate Assembly,<br>Lower Sash Guide<br>Attaching Bolts | 7. Stop, Rear Up-Travel<br>Attaching Bolt                 | 11. Rear Belt Trim<br>Support Retainer<br>Attaching Bolt  | 15. Guide Pin Stabilizer<br>(On Belt<br>Reinforcement)<br>Attaching Bolts |
| 4. Regulator Assembly,<br>Attaching Bolts                 | 8. Support, Front<br>Window Bumper<br>Attaching Bolt      | 12. Retainer, Inside<br>Locking Rod                       |   |

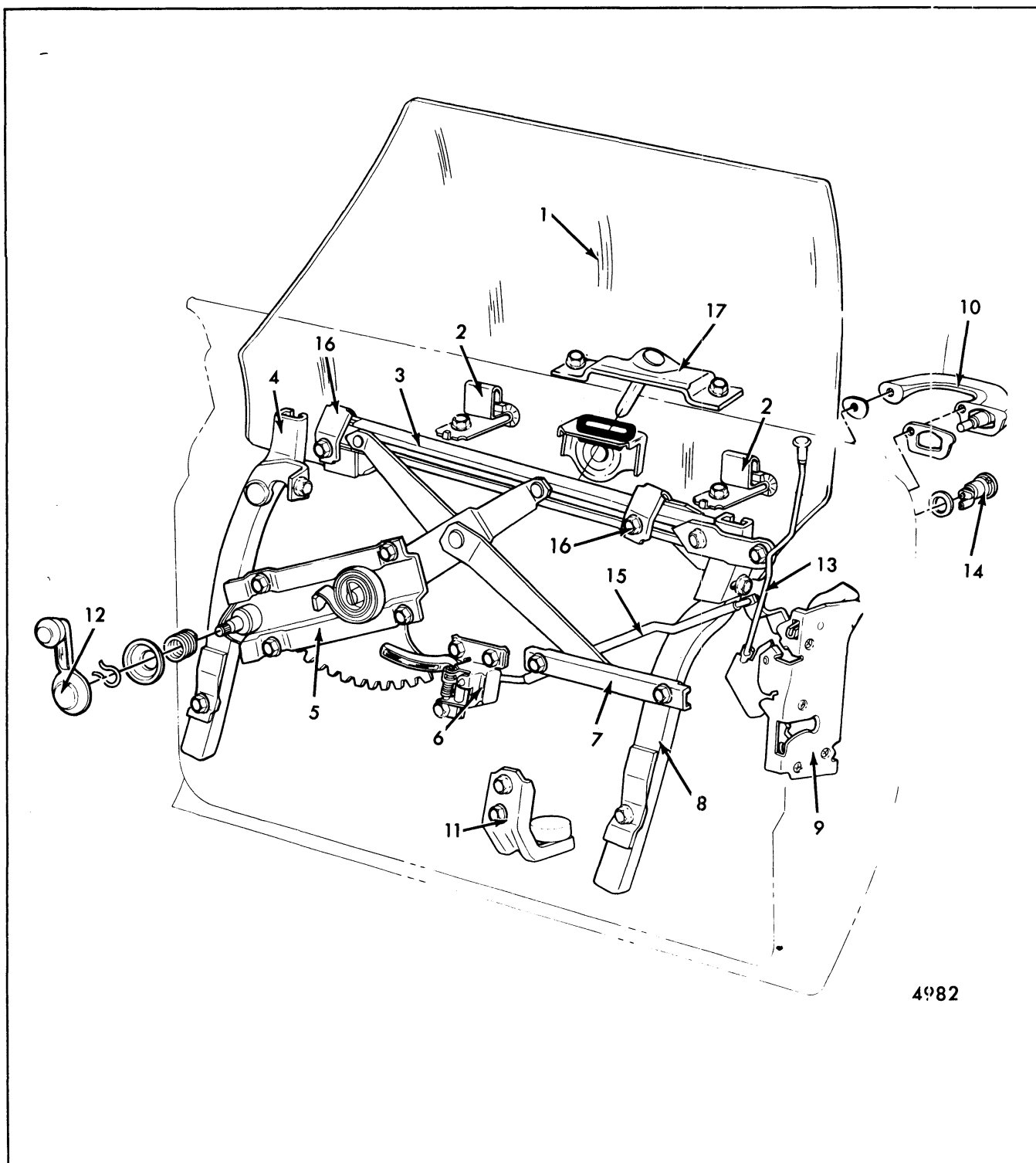
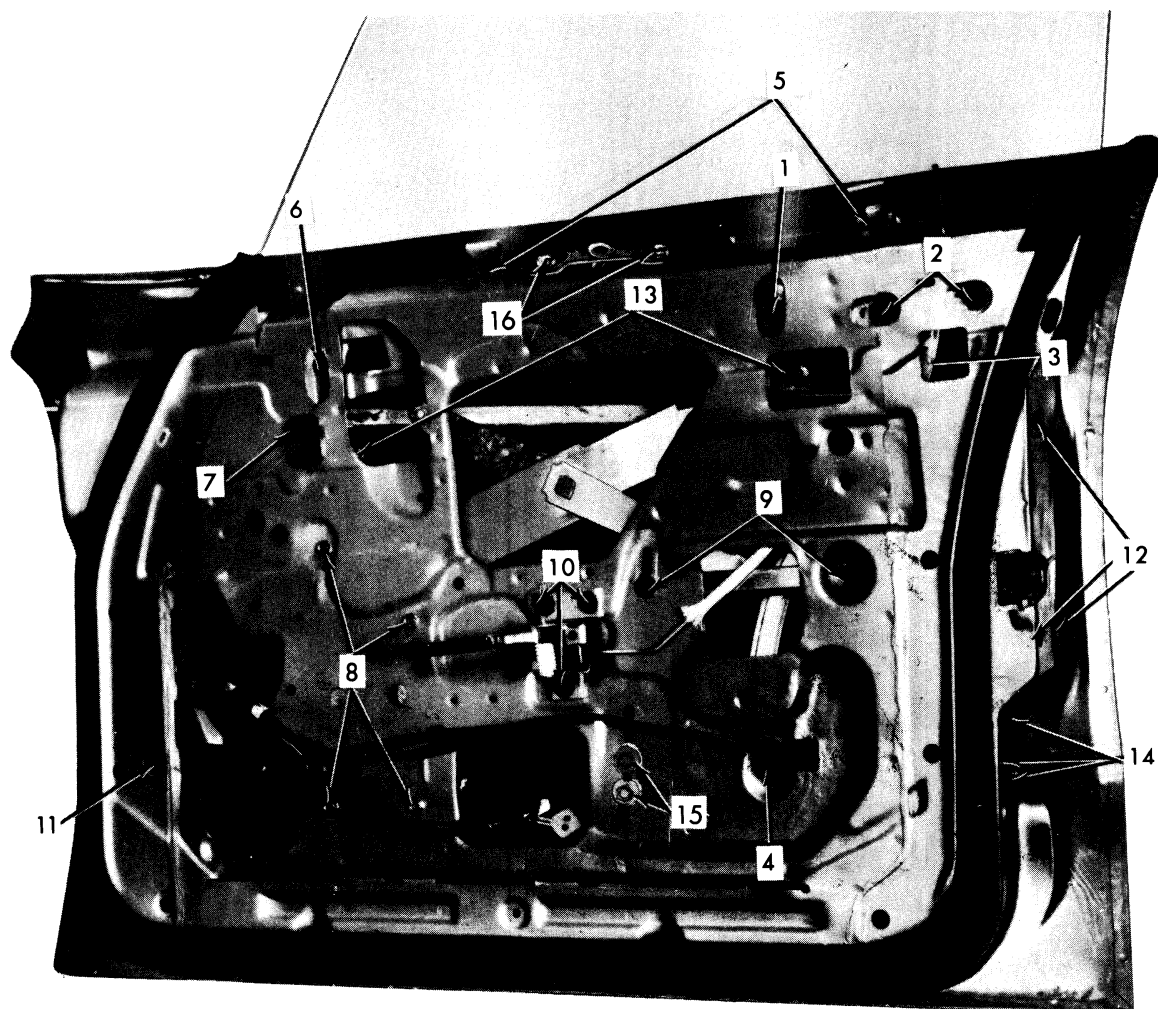


Fig. 5-47-Front Door Hardware - "B and C-39 and 49" Styles and "C-69" Styles

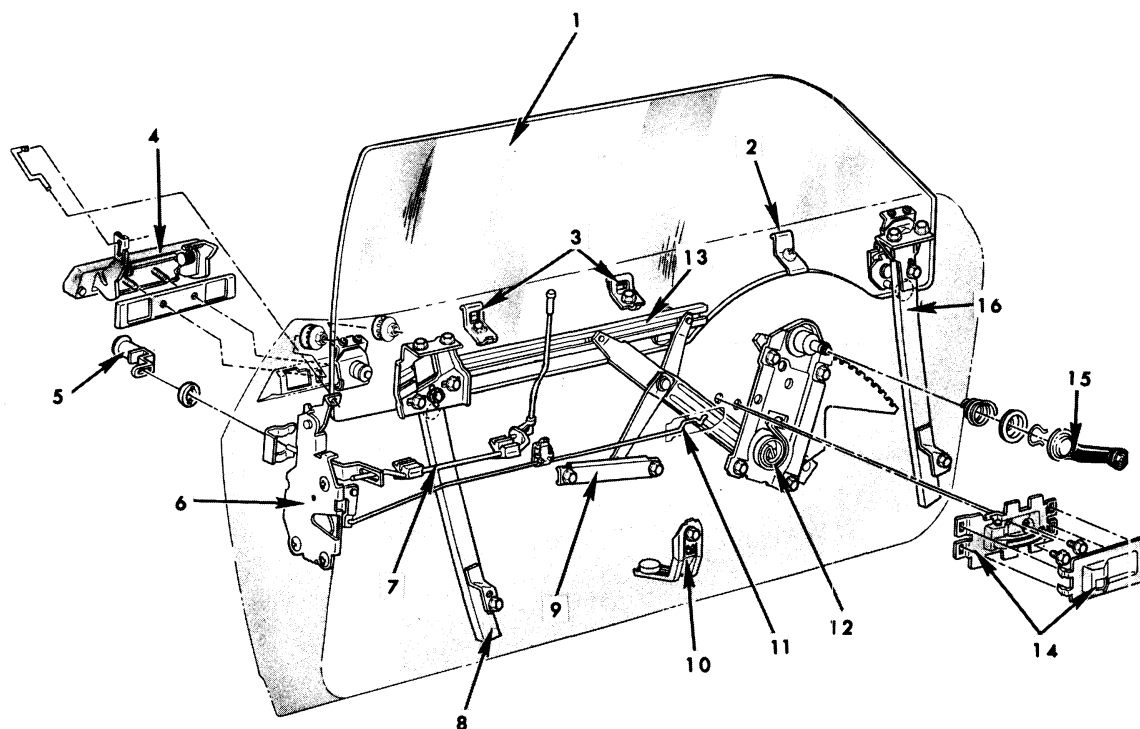
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|--------------------------------|-----------------------------|---|--|
| 1. Window Assembly             | 6. Door Lock Remote Control | 11. Window Down-Travel Support Bracket and Bumper | 15. Remote Control to Lock Connecting Rod        |
| 2. Belt Trim Support Retainers | 7. Inner Panel Cam          | 12. Window Regulator Handle                       | 16. Window Up-Travel Stops                       |
| 3. Lower Sash Channel Cam      | 8. Rear Guide               | 13. Inside Locking Rod                            | 17. Guide Pin Stabilizer (On Belt Reinforcement) |
| 4. Front Guide                 | 9. Door Lock                | 14. Lock Cylinder                                 |  |
| 5. Window Regulator            | 10. Door Outside Handle     |   |  |



4983

Fig. 5-48-Front Door Hardware - "B and C-39 and 49" Styles and "C-69" Styles

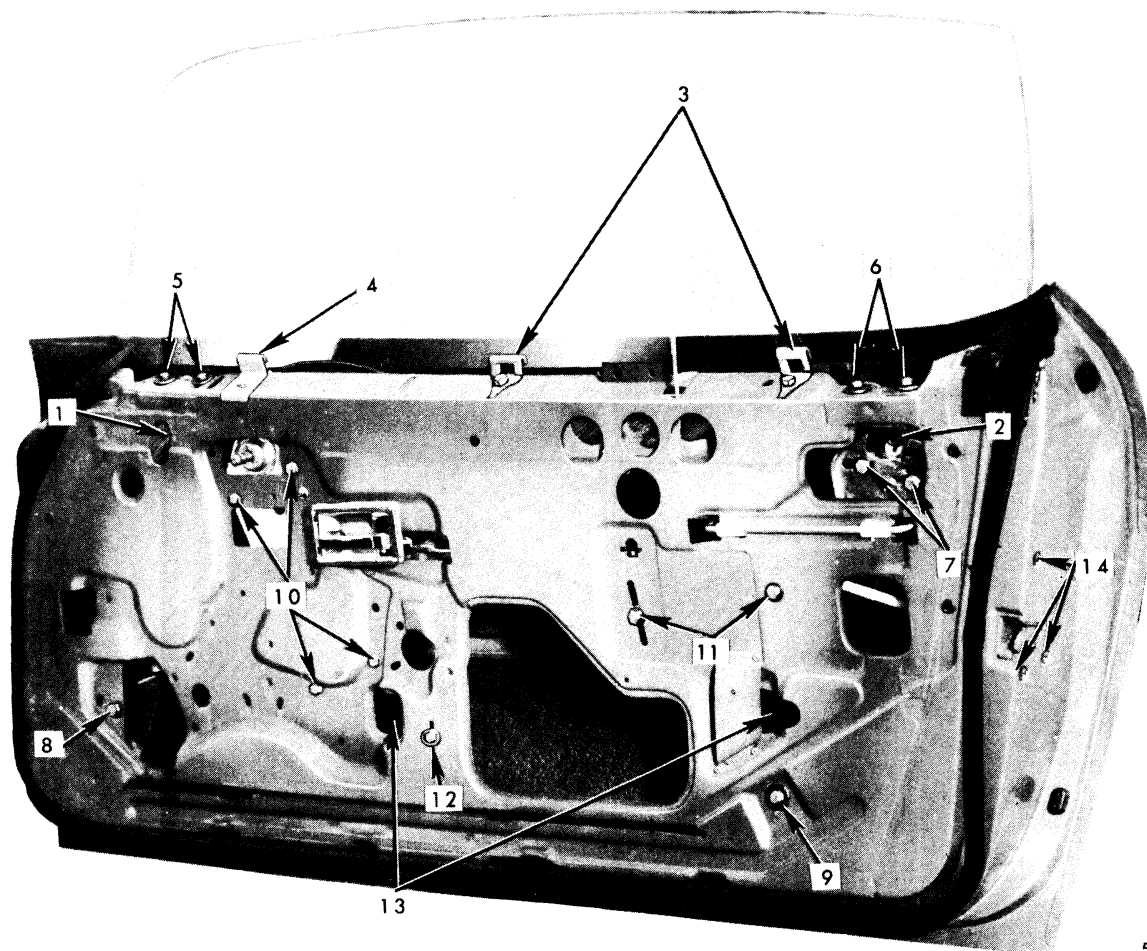
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|---|---|--|--|
| 1. Window Rear Upper Stop Attaching Bolt      | 5. Belt Trim Support Retainer Attaching Bolts | 10. Door Lock Remote Control Attaching Bolts             | 14. Door Lock Solenoid Attaching Screws                          |
| 2. Rear Guide Upper Bracket Attaching Bolts   | 6. Window Front Upper Stop Attaching Bolt     | 11. Front Guide Lower Attaching Bolt                     | 15. Window Down-Travel Bumper Support Attaching Bolts            |
| 3. Rear Guide to Upper Bracket Attaching Bolt | 7. Front Guide Upper Attaching Bolts          | 12. Door Lock Attaching Screws                           | 16. Guide Pin Stabilizer (On Belt Reinforcement) Attaching Bolts |
| 4. Rear Guide Lower Attaching Bolt            | 8. Window Regulator Attaching Bolts           | 13. Window Lower Sash Channel Cam Stud Nuts Access Holes |  |
|   | 9. Inner Panel Cam Attaching Bolts            |  |  |



3052

Fig. 5-49-Door Hardware - "F" Styles

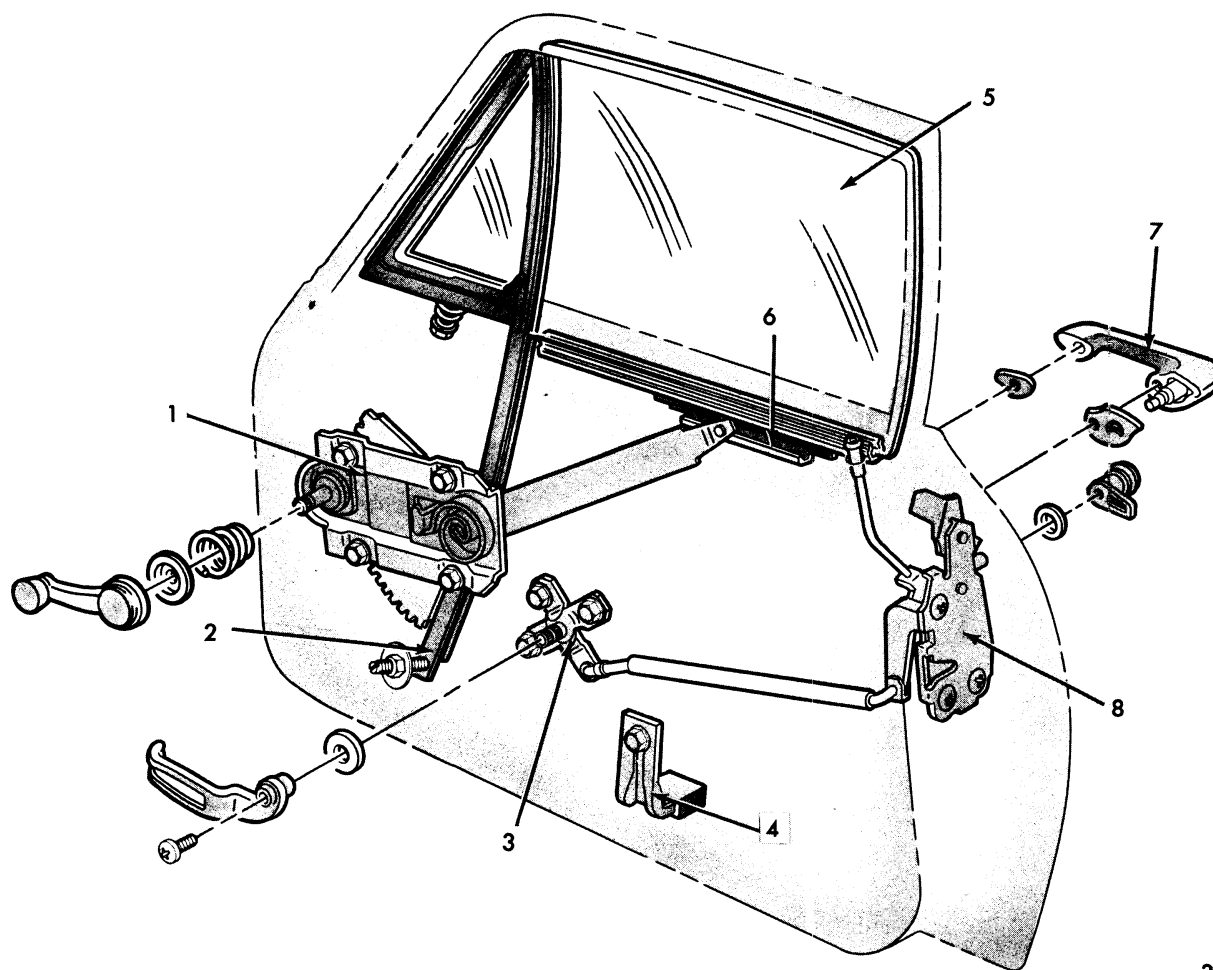
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|---|---------------------------------------|--------------------------------|---|
| 1. Window Assembly                            | 5. Lock Cylinder                      | 11. Remote Control to Lock Rod | 14. Remote Control Handle Assembly and Escutcheon |
| 2. Trim Pad Hanger Plates                     | 6. Lock Assembly                      | 12. Window Regulator (Manual)  | 15. Window Regulator Handle                       |
| 3. Trim Pad Hanger Plate and Stabilizer Strip | 7. Inside Locking Rod                 | 13. Lower Sash Channel Cam     | 16. Front Guide                                   |
| 4. Door Outside Handle                        | 8. Rear Guide                         |                                |   |
|   | 9. Inner Panel Cam                    |                                |   |
|   | 10. Window Down Travel Bumper Support |                                |   |



5051

Fig. 5-50-Door Hardware - "F" Styles

- |  |   |                                      |   |
|--|---|--------------------------------------|---|
| 1. Window Front Up-Travel Stop Attaching Bolt                              | 4. Trim Support Hanger Attaching Screws     | 8. Front Guide Lower Attaching Bolt  | 12. Window Bumper Support Attaching Bolt            |
| 2. Window Rear Up-Travel Stop Attaching Bolt                               | 5. Front Guide Upper Attaching Bolts        | 9. Rear Guide Lower Attaching Bolt   | 13. Window Lower Sash Channel Cam Nuts Access Holes |
| 3. Window Stabilizer Strip and Adjustable Trim Hanger Plate Attaching Bolt | 6. Rear Guide Upper Bracket Attaching Bolts | 10. Window Regulator Attaching Bolts | 14. Door Lock Attaching Screws                      |
|  | 7. Rear Guide Upper Attaching Bolts         | 11. Inner Panel Cam Attaching Bolts  |   |



3091

Fig. 5-51-Front Door Hardware - "X-69" Styles with Optional Ventilator

- |                                |                                    |                               |                        |
|--------------------------------|------------------------------------|-------------------------------|------------------------|
| 1. Window Regulator            | 3. Door Lock Remote Control        | 5. Front Door Window Assembly | 7. Door Outside Handle |
| 2. Ventilator Division Channel | 4. Window Down-Travel Stop Support | 6. Lower Sash Channel Cam     | 8. Door Lock           |

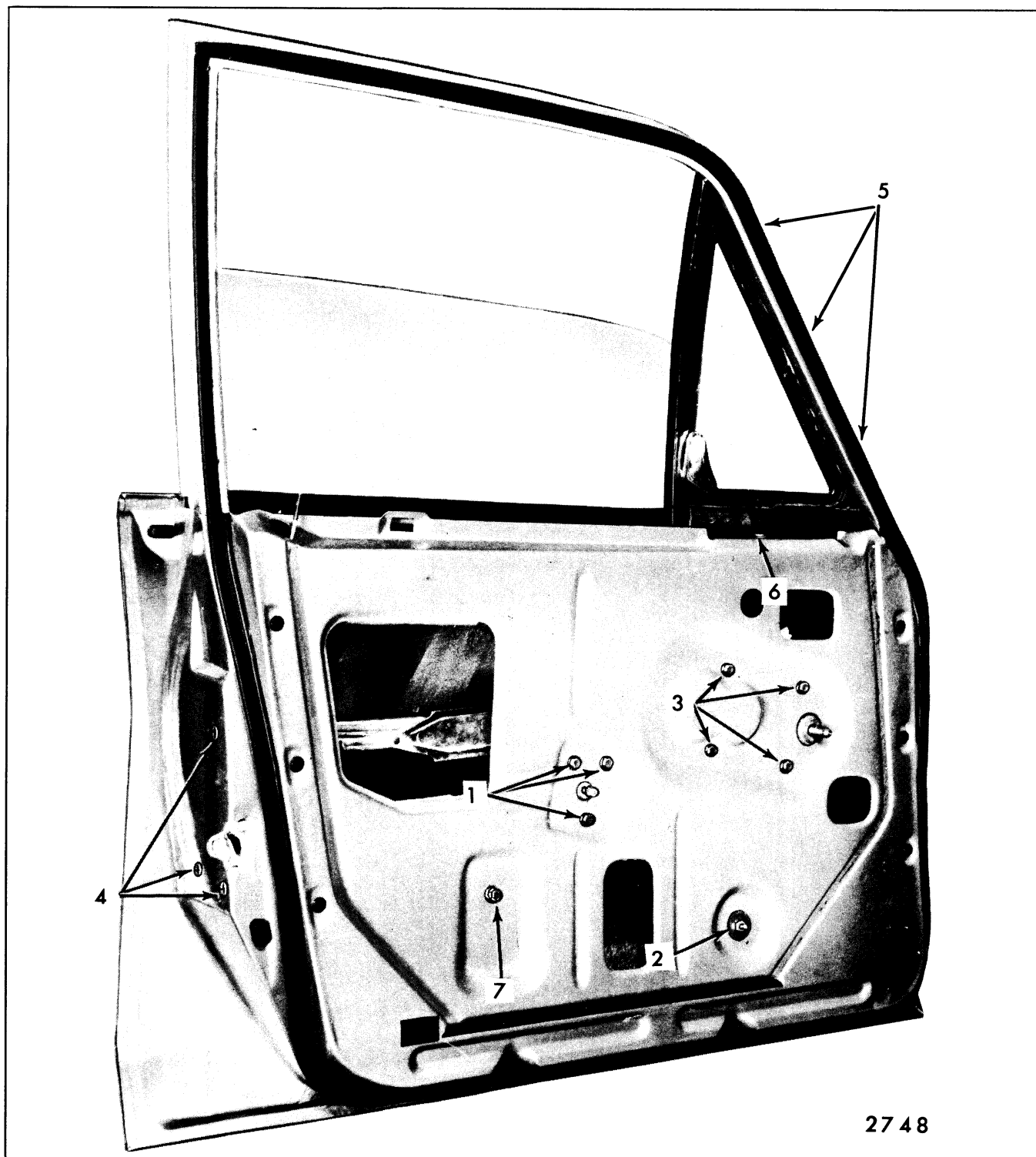


Fig. 5-52-Front Door Hardware - "X-69" Styles with Optional Ventilator

- |   |                                     |  |  |
|---|-------------------------------------|--|--|
| 1. Door Lock Remote Control Attaching Bolts         | 3. Window Regulator Attaching Bolts | 5. Door Upper Frame Attaching Screws to Ventilator Frame | 7. Window Down Stop Support Attaching Bolt |
| 2. Ventilator Division Channel Lower Adjusting Stud | 4. Door Lock Attaching Screws       | 6. Ventilator Frame to Door Outer Panel Attaching Bolt   |  |

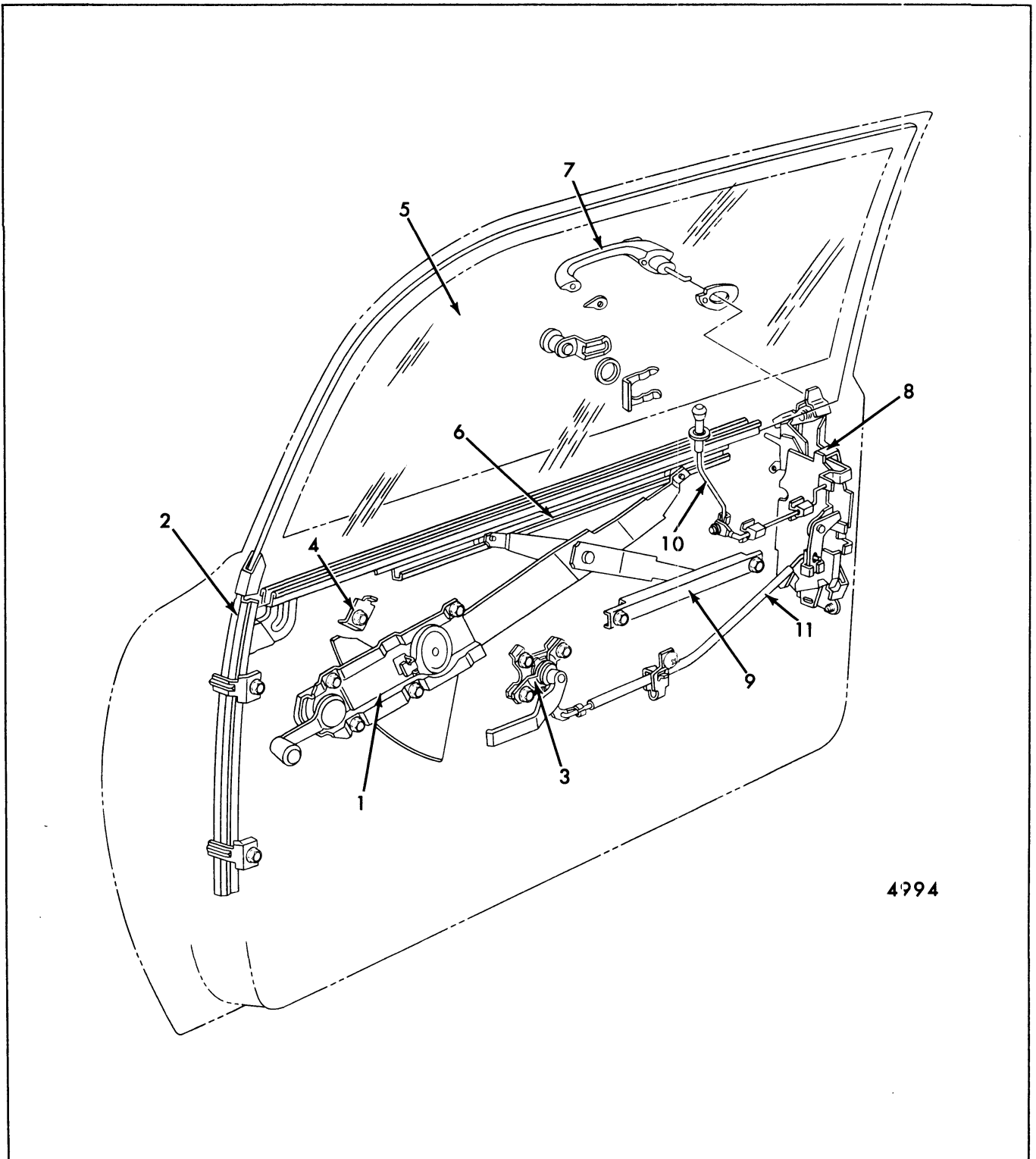


Fig. 5-53-Front Door Hardware - "X-17,27,69" Styles

- |                               |                                     |                                   |   |
|-------------------------------|-------------------------------------|-----------------------------------|---|
| 1. Window Regulator           | 4. Front Door Window Regulator Stop | 7. Door Outside Pushbutton Handle | 10. Inside Locking Rod                    |
| 2. Glass Run Channel Retainer | 5. Window Assembly                  | 8. Door Lock                      | 11. Remote Control to Lock Connecting Rod |
| 3. Door Lock Remote Control   | 6. Lower Sash Channel Cam           | 9. Inner Panel Cam                |   |



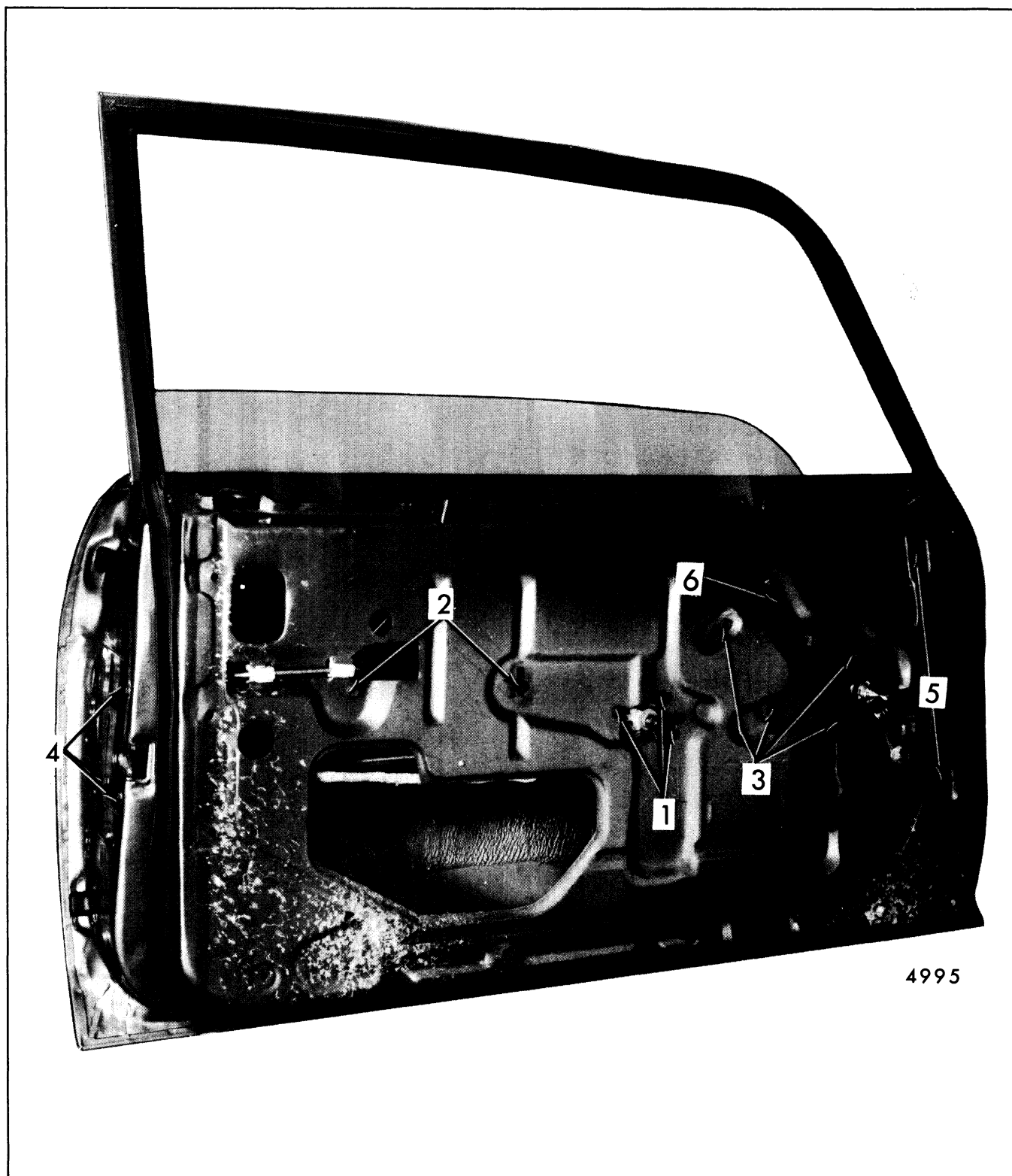


Fig. 5-54-Front Door Hardware - "X-17,27,69" Styles

- |  |                                      |  |                                   |
|--|--------------------------------------|--|-----------------------------------|
| 1. Door Lock Remote Control Attaching Screws | 2. Inner Panel Cam Attaching Screws  | 4. Door Lock Attaching Screws            | 6. Regulator Stop Attaching Screw |
|  | 3. Window Regulator Attaching Screws | 5. Run Channel Retainer Attaching Screws |                                   |

## FRONT DOOR HINGES - All Except "X" Styles

### Description

All hinges are constructed of steel and incorporate a two stage hold-open feature in the lower hinge on "X" styles and upper hinge on "A, B, C, E and F" styles.

The front door is mounted to the front body hinge pillar with an upper and lower hinge. Figure 5-55 illustrates typical front door bolt-on hinge installation, except for "X" styles. "X" style hinges are welded to door and body hinge pillars. All styles use a swing-in" type hinges, which means the leading edge of the door swings inboard of the front fender when opened.

### Front Door Hinge Adjustment - All Except "X" Styles

Door adjustments are provided through use of float- ing anchor plates in door and front body hinge pillars. When checking door for alignment, and prior to making any adjustments, remove door lock striker from body to allow door to hang freely on its hinges. Loosen front fender where required.

**NOTE:** When making door adjustments, refer to door lock striker engagement specifications in the "Front and Rear Door" section of this manual.

1. Adjustments provided at body hinge pillars - up and down and fore and aft on all body styles.

**NOTE:** If REARWARD adjustment of either front door is made, replace the jamb switch. (Refer to Electrical Section of this manual for door jamb switch replacement).

2. Adjustments provided at door hinge pillars - in and out on all body styles.
3. For removal or adjustment of all front door hinge to body attaching bolts, use tool J-24353 - 1/2" wrench (or equivalent) as shown in Figure 5-56. After hinge adjustment, torque attaching bolts 17 to 22 foot pounds.

### Door Removal and Installation - All Except "X" Styles

Although the door can be removed from the body with or without the hinges attached to the door, it is recommended that when removing the door only, remove the door from the hinges. Accessibility to the door side hinge bolts is better than to the body side bolts.

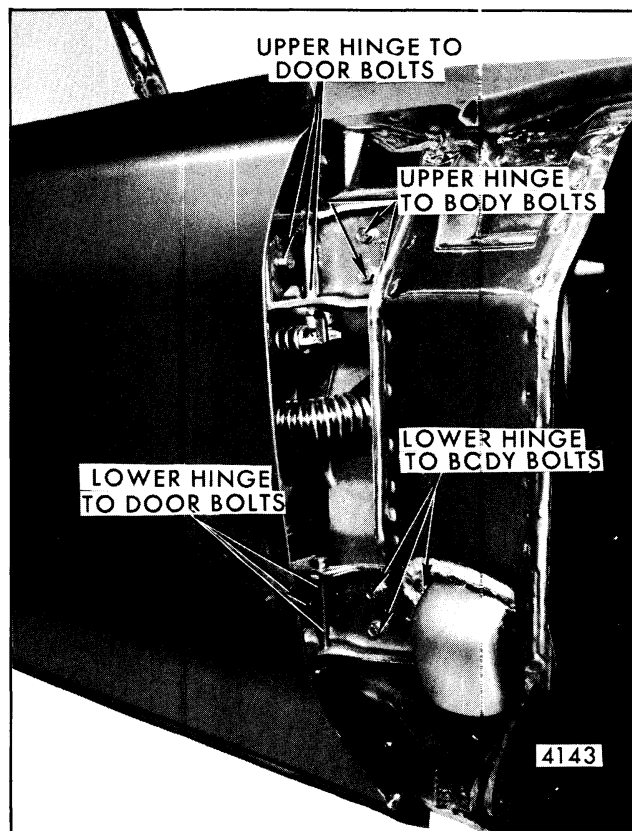


Fig. 5-55-Typical Front Door Hinge Attachment - All Except "X" Styles

1. Prior to loosening any hinge bolts, mark position of hinge on door to facilitate adjustment when reinstalling door on hinge.
2. On doors equipped with power operated windows, power door locks, etc., remove trim pad and detach inner panel water deflector sufficiently to disconnect harness assembly(ies) and remove same from door.
3. With aid of a helper, support door in open position and remove upper and lower hinge to door hinge pillar attaching bolts (Fig. 5-55).
4. To install, reverse removal procedure. Adjust door as outlined in subsequent adjustment procedure. Torque hinge attaching bolts 17 to 22 foot pounds.

### Hinge Removal - All Except "X" Bodies (Styles Not Equipped With Power Options In The Door)

1. Remove front door as previously described. Mark position of hinge on body hinge pillar and remove hinge to body hinge pillar attaching bolts (Fig. 5-55).

- To install door, reverse removal procedure. Prior to installation, apply coat of heavy body sealer to surface of hinge that contacts door and front body hinge pillar for protection against corrosion. Adjust door hinge as subsequently described. Torque hinge attaching bolts 17 to 22 foot pounds.

**NOTE:** On all styles, removal of upper and lower hinges from body hinge pillar can be accomplished with the door removed and without loosening front fender.

### Hinge Removal (Styles Equipped With Power Options In The Door)

- Loosen front fender along the lower edge as outlined in Car Division Service Publications.
- Support door in the full-open position and remove hinge to door and body hinge pillar attaching bolts (Fig. 5-55). Then, remove hinge from body.
- To install, reverse removal procedure. Prior to installation of hinge, apply a coat of heavy bodied sealer to surface of hinge that contacts door and body hinge pillar for protection against corrosion. Align door as subsequently described. Torque hinge attaching bolts 17 to 22 foot pounds.

### FRONT DOOR HINGES - "X" Styles

#### Description

Front door hinges on "X" body styles are welded to the door and body hinge pillars. Because of the positive attachment, all adjustment provisions have been eliminated. However, a removable hinge pin has been

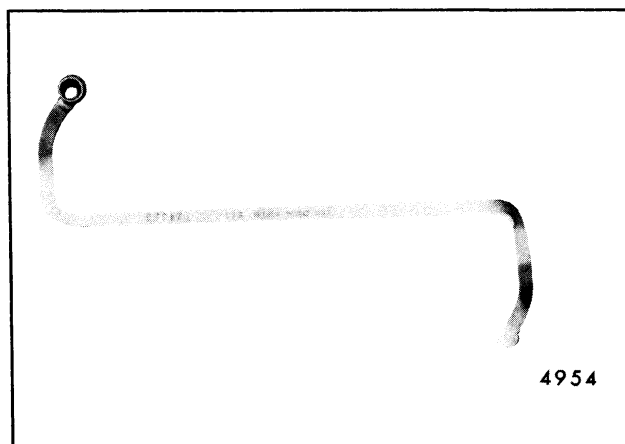


Fig. 5-56-Front Door Hinge Tool J-24353 - "A, B, C, E and F" Styles

provided for removal of the door assembly from the body. Replacement hinges are serviced as an assembly. **DOOR SIDE** hinges are pierced to permit bolt-on installation into tapped anchor plates. **BODY SIDE** of service replacement hinges **DO NOT** have bolt-on provisions and must be arc-welded to the body hinge pillar. Tapped anchor plates must be used instead of nuts and washers to insure structural integrity when replacing a hinge assembly. Anchor plates are not furnished with the hinge assembly and must be ordered separately. In addition, door side and body side hinge straps, hinge pins, bushings and "E" rings are available as separate service parts. Service replacement hinge assemblies will include a removable pin and "E" ring retainer so that the hinges can be separated for individual door side and/or body side strap replacement (refer to Fig. 5-57).

### DOOR REMOVAL - "X" Styles

- Remove "E" ring (snap retainer) from lower end of both upper and lower hinge pins (Fig. 5-57).
- Disengage door hold-open spring from lower hinge assembly by prying upward against spring with a suitable prying tool (Fig. 5-58). Use care not to damage hold-open link.

**WARNING:** COVER SPRING WITH SHOP TOWEL TO PREVENT SPRING FROM "FLYING" AND POSSIBLY CAUSING PERSONAL INJURY OR DAMAGE.

- Using tapered type tool, drive wedge between head of hinge pin and hinge. This will raise pin sufficiently to force serrated shoulder on the upper end of the hinge pin out of hinge.

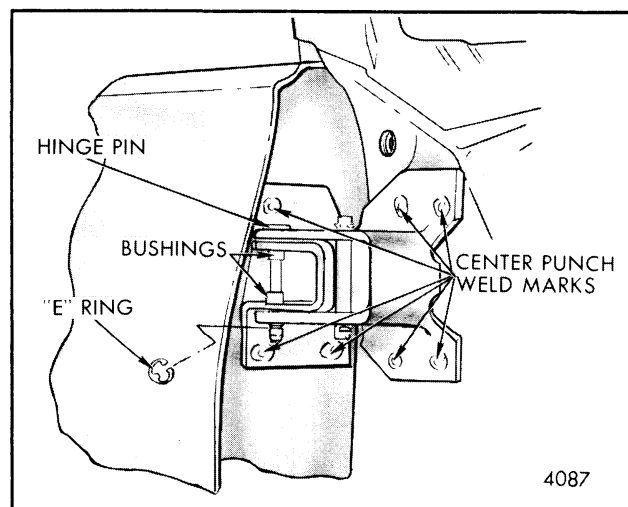


Fig. 5-57-Front Door Hinge "E" Ring Removal

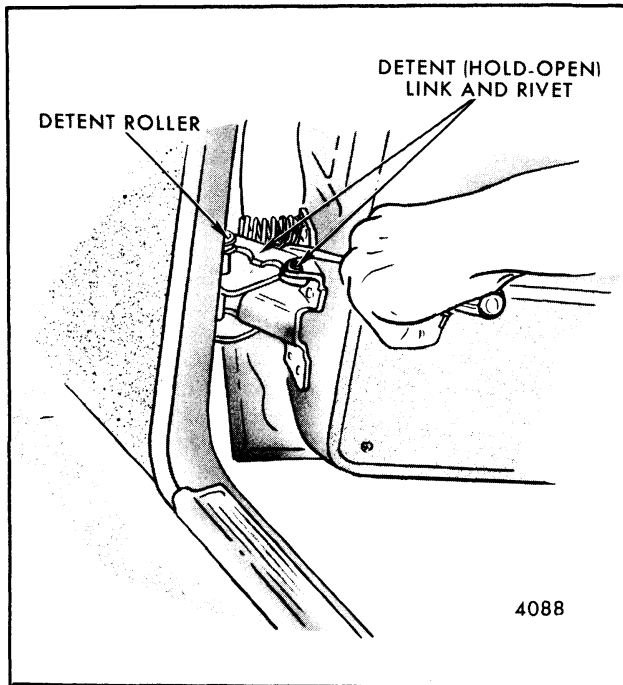


Fig. 5-58-Front Door Hinge "Hold-Open Spring" Removal

4. With aid of a helper to support door at rear edge, remove loosened hinge pins. Then, remove door assembly.

## DOOR INSTALLATION - "X" Styles

1. With aid of a helper, place door into position and insert hinge pins and "E" rings.
2. Using spring compressing tool (J-23497 or equivalent), install hold-open spring in lower hinge (Figs. 5-59 and 5-60).

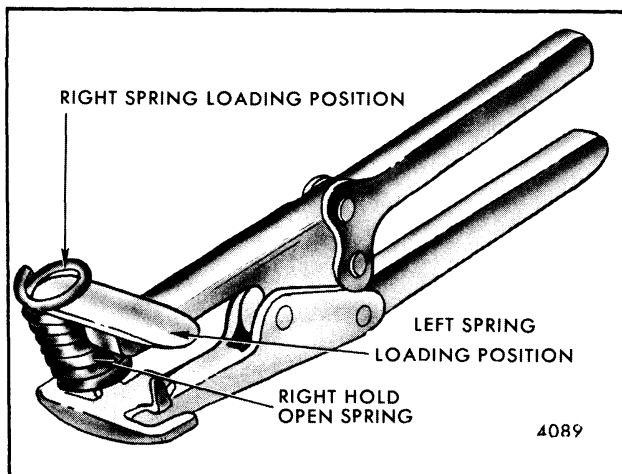


Fig. 5-59-Hold-Open Spring, Loading Positions Using Tool J-23497, or Equivalent

**NOTE:** When installing hold-open spring on tool J-23497 or equivalent position spring so that the cut end of the spring is in line with the center of the blade on the straight jaw. Figure 5-59 illustrates position of spring for right side installation (left side installation would utilize the other end of the blade). The other end of the spring should be seated over the hook on the opposite jaw of the tool.

**WARNING:** BE SURE SPRING IS SEATED PROPERLY BEFORE COMPRESSING TO PREVENT THE SPRING FROM SLIPPING OUT OF THE TOOL AND POSSIBLY CAUSING DAMAGE OR PERSONAL INJURY.

## DOOR SIDE HINGE STRAP - "X" Styles

### Removal

1. Remove door trim assembly and inner panel water deflector, as previously described.
2. Remove door from body as previously described.
3. Center punch and scribe location of hinge on door hinge pillar (refer to Fig. 5-61).

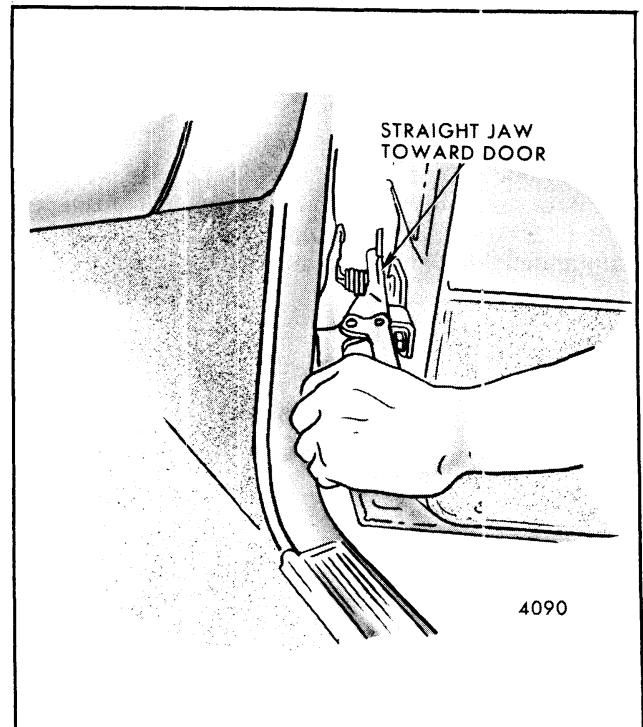


Fig. 5-60-Front Door Hinge Hold-Open Spring Installation Using Tool J-23497, or Equivalent

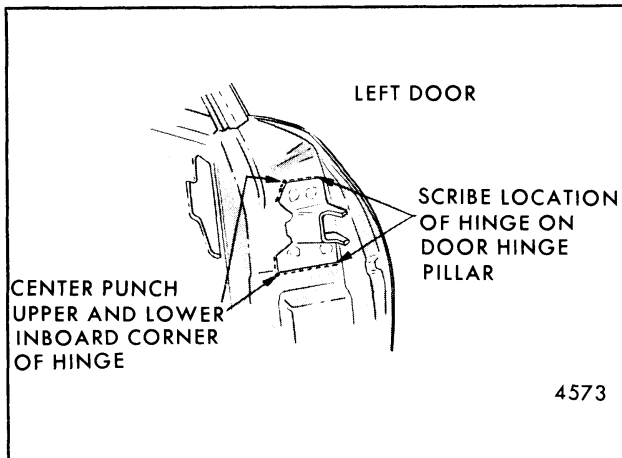


Fig. 5-61-Locating Hinge on Door Hinge Pillar

4. Center punch visible weld marks on hinge base as shown in Figure 5-57 and drill a 1/8" pilot hole completely through welds at center punch marks.
5. Using 1/8" hole as a guide, drill out welds with a 1/2" drill bit.

**NOTE:** When drilling out welds, drill only deep enough to penetrate hinge base to release hinge from panel as shown in Figure 5-62.

6. A slight amount of weld may still retain hinge base to panel. Drive a chisel between panel and hinge base to separate hinge from panel.

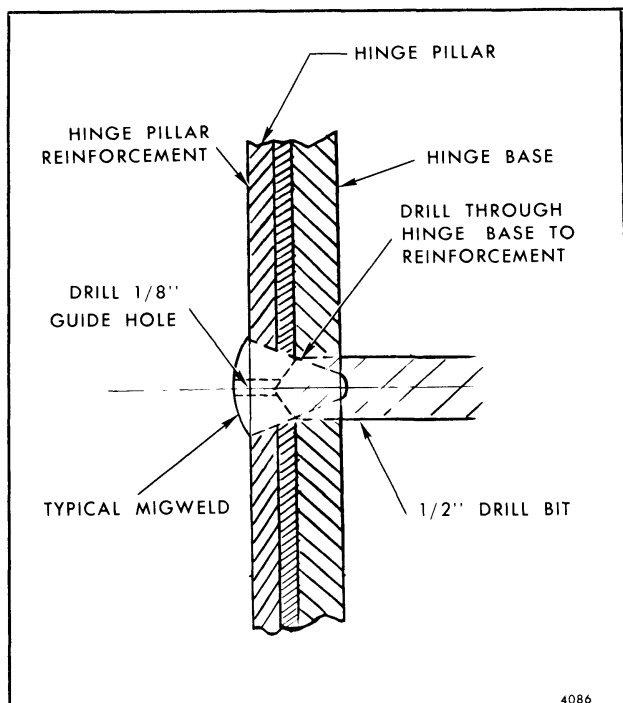


Fig. 5-62-Typical Weld

## Installation

1. Position the replacement bolt-on hinge within scribe marks on the hinge pillar facing and center punch bolt hole locations.
2. Using a 1/2" drill bit, drill hinge attaching holes. The 1/2" holes in the hinge pillar will provide for some in and out adjustment when reinstalling the door assembly.
3. Coat surface of hinge that mates with hinge pillar with medium bodied sealer and install hinge using specified 5/16" x 1-1/2" bolts and service hinge anchor plates previously described.
4. Install door to body as previously described.

## BODY SIDE HINGE STRAP

### Removal

1. Remove door assembly from body as previously described.
2. Locate hinge position on body hinge pillar (refer to Fig. 5-63).
  - a. Scribe location of upper and lower hinge tabs on hinge pillar.
  - b. Measure exactly 1-3/4" rearward from upper and lower forward flange of hinge. Center punch and drill indentation at this location into (not through) hinge pillar facing with 1/8" drill bit.

**NOTE:** Drill indentation will serve as a locator for the replacement hinge and will not be lost during torching operation.

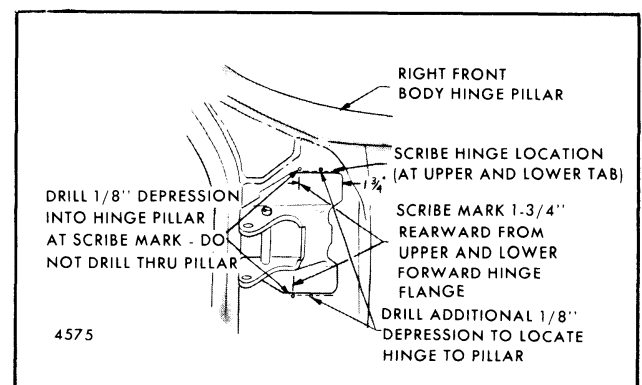


Fig. 5-63-Locating Hinge Position on Body Hinge Pillar - "X" Styles

- c. Drill additional 1/8" locator at the upper and lower hinge tab immediately forward of the measured locator.
3. Protect the carpet and door sill plate area adjacent to the front body hinge pillar with asbestos sheeting.
4. Using a cutting torch, separate main portion of hinge from upper and lower tabs. After main portion has been removed, vertically cut upper and lower hinge tabs with cutting torch, as shown in Figure 5-64.
5. Mig welds holding separated hinge tabs can be broken by twisting or rotating the individual hinge tab segments with suitable tool, such as, grip type pliers, pipe wrench, etc. (refer to Fig. 5-65).
6. Dress and prepare hinge pillar facing as required for replacement hinge.

### Installation

1. Measure 1-3/4" rearward from upper and lower weld tab forward flange of replacement hinge, and mark dimension on hinge as shown in Figure 5-66.
2. Locate replacement hinge to scribe marks and drill depressions identifying 1-3/4" dimension (Fig. 5-67). Tack in place with arc weld at upper and lower hinge tabs.
3. Re-hang door and install hinge pins to insure proper alignment of door to opening.
4. Remove door and complete arc welding of hinge. Arc weld completely around upper and lower hinge tab as shown in Figure 5-68.
5. Wire brush and clean welds as required. Seal around perimeter of hinge with a paintable sealer.

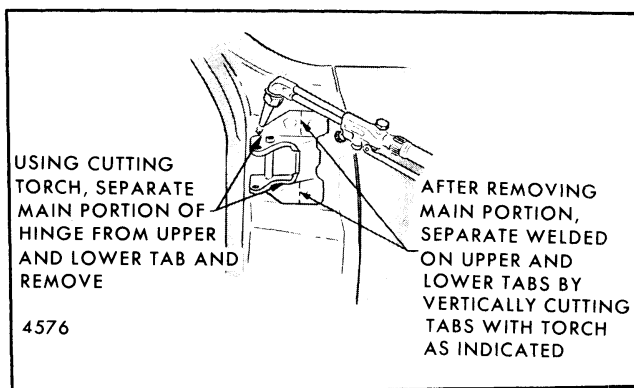


Fig. 5-64-Body Side Hinge Strap Removal - "X" Styles

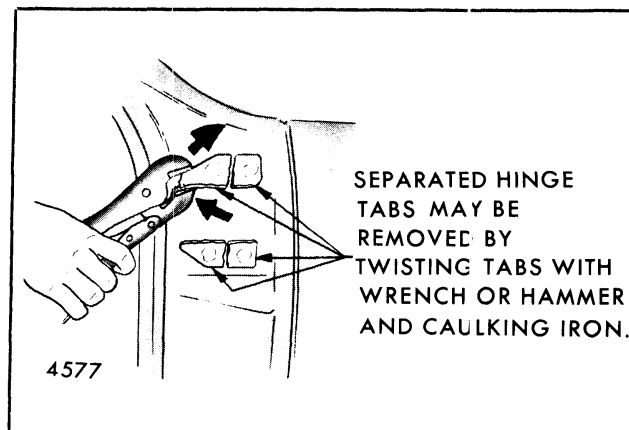


Fig. 5-65-Body Side Hinge Strap Removal - "X" Styles

6. Refinish hinge pillar and replacement hinge as required.
7. Install door assembly as previously described.

### INSIDE LOCKING ROD - All Coupe Styles

#### Removal and Installation

1. On "X" styles, remove door trim assembly. On "A,B,C,E and F" styles, remove upper and lower portion of door trim assembly. Peel inner panel water deflector back sufficiently to gain access to inside locking rod retainers (Fig. 5-46).
2. Slide inside locking rod to door inner panel plastic retainers in direction of arrows shown in Figure 5-46.
3. Disengage rod from lock and lower locking rod through beltline to remove.

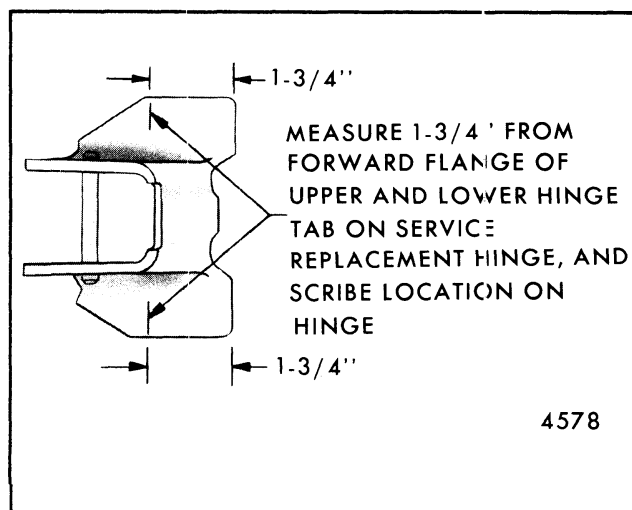


Fig. 5-66-Body Side Hinge Strap Installation - "X" Styles

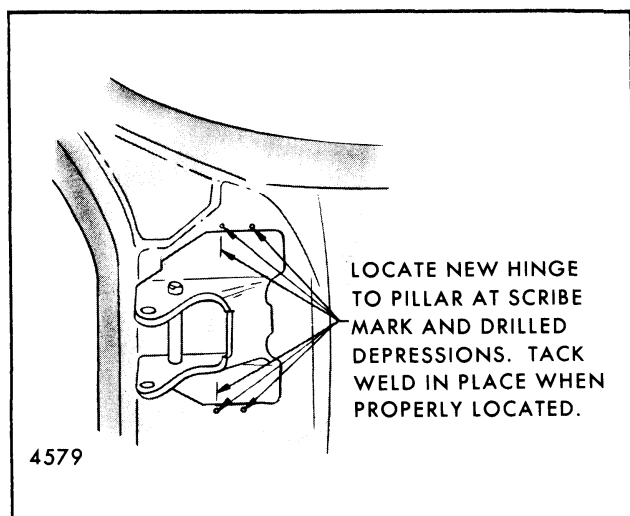


Fig. 5-67-Body Side Hinge Strap Installation - "X" Styles

- To install, reverse removal procedure.

## INSIDE LOCKING ROD - All Sedan Styles

### Removal and Installation

- Remove upper and lower portion of door trim assembly on "A, B and C" styles, remove door trim assembly from "X" styles. Peel inner panel water deflector back sufficiently to gain access to spring clip at door lock locking lever.
- Disengage spring clip securing locking rod to door lock locking lever as previously described in the "Front and Rear Doors" portion of this section.

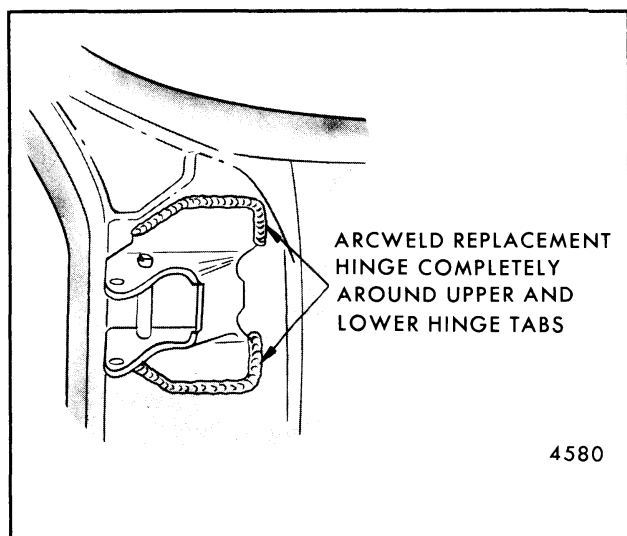


Fig. 5-68-Body Side Hinge Strap Installation - "X" Styles

- Lift locking rod out through beltline of door.
- To install, reverse removal procedure.

## FRONT DOOR LOCK REMOTE CONTROL AND CONNECTING ROD

### Description

There are two basic types of door lock remote controls; spindle type and pull-in type remote control and handle assembly. All spindle type and pull type remote control assemblies are secured to the door inner panel by attaching bolts. On some styles, the remote is attached to the inboard surface of the inner panel and on other styles to the outboard surface. The removal and installation is similar, however, for either method of attachment.

**NOTE:** "F" styles with standard trim utilize a pull-in type remote control and handle assemblies that can be removed from the door without trim removal. For removal, refer to door trim assembly removal in "Door Trim" portion of this section.

### Removal and Installation - All Styles Except "F" Styles with Standard Trim

- Raise door window, remove door trim pad (on "A,B,C and E" styles, remove upper and lower portion of door trim assembly) and detach inner panel water deflector.

**NOTE:** Cadillac "E" body styles are equipped with two remote controls, one front (pull-in type) and one rear (spindle type). Attachment of both is similar.

- Remove bolts securing remote control to door inner panel (Refer to Fig. 5-46 for pull-in type and Fig. 5-52 for spindle type).
- Pivot remote control to disengage lock connecting rod and remove remote control assembly.
- If remote control to lock connecting rod is to be removed, refer to "Front and Rear Door" section for method of disengaging spring clip at lock end of rod.
- To install, reverse removal procedure.

## FRONT DOOR LOCK ASSEMBLY

### Description

All styles use the fork bolt lock design which includes a safety interlock feature. The door is secured

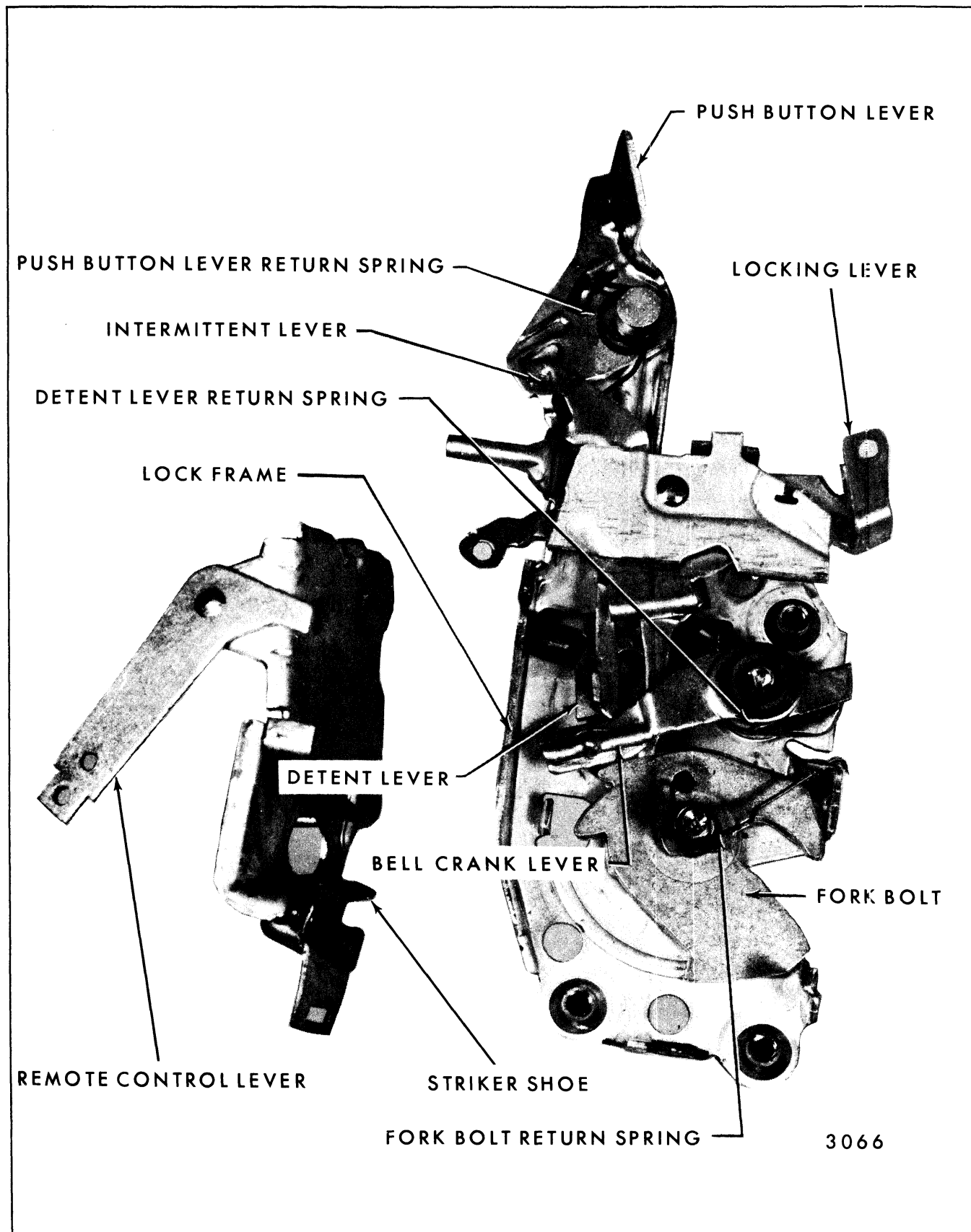


Fig. 5-69-Front Door Lock Assembly - "F and X" Styles



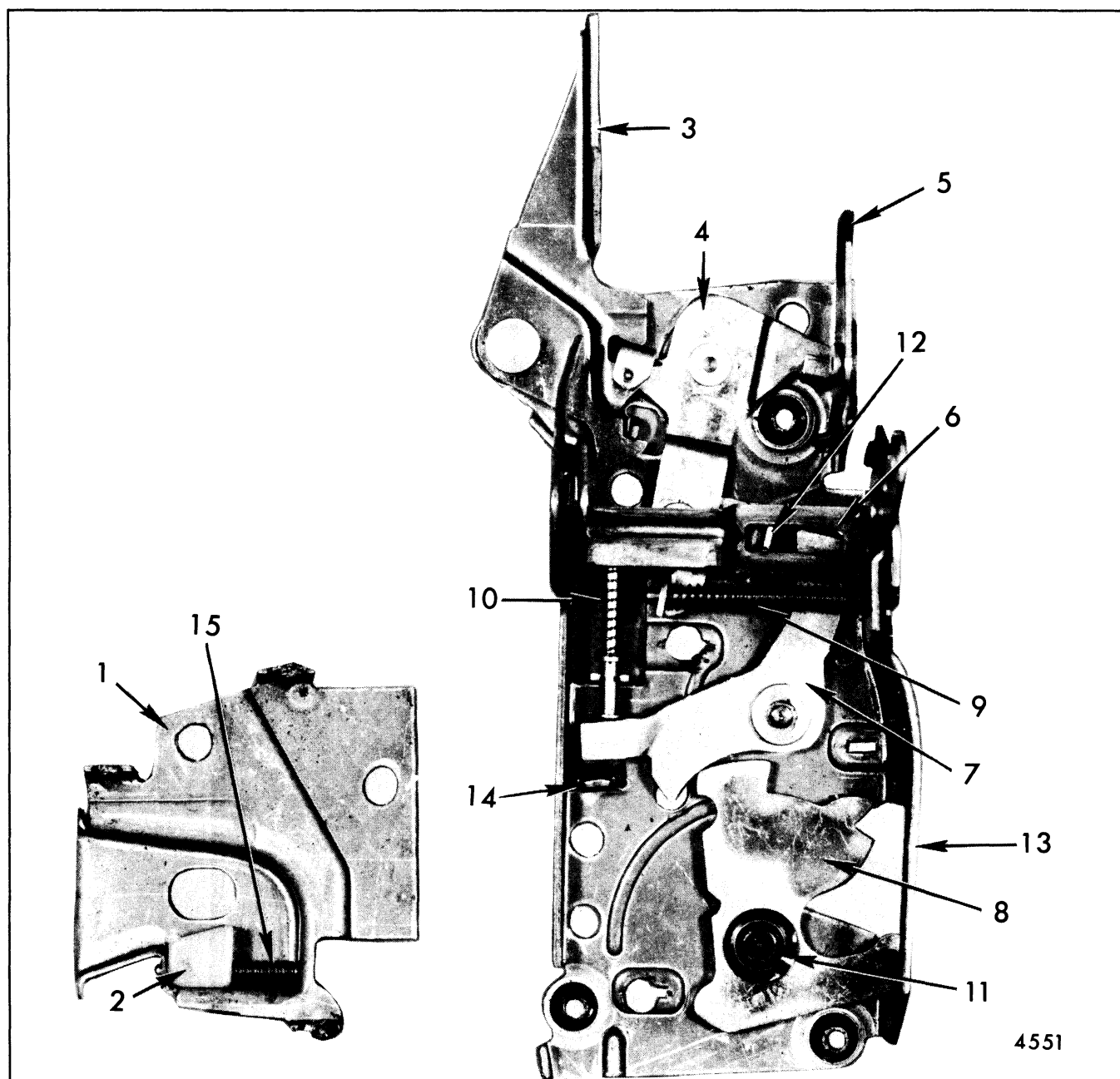


Fig. 5-70-Front Door Lock Assembly - "A, B, C and E" Styles

- |                         |                              |   |                                 |
|-------------------------|------------------------------|---|---------------------------------|
| 1. Lock Back Plate      | 6. Locking Lever             | 10. Detent Spring   | 12. Intermittent Lever          |
| 2. Sliding Shoe         | 7. Detent Lever              | 11. Spring Tension Washer (Replace Fork Bolt Return Spring) | 13. Lock Frame                  |
| 3. Push Button Lever    | 8. Fork Bolt                 |   | 14. Lock Silencer               |
| 4. Transfer Lever       | 9. Push Button Return Spring |   | 15. Sliding Shoe Pin and Spring |
| 5. Remote Control Lever |                              |   |                                 |

in a closed position when the door lock fork bolt snaps over and engages the striker bolt. Front and rear doors can be locked from the inside by depressing the passenger guard door lock button located on the upper door panel. All doors can be locked from the outside by simply depressing the interior door lock button and closing the door. The front doors can also be locked by using the square headed key.

**WARNING:** FIGURES 5-69 AND 5-70 DEPICTS TYPICAL "F AND X" AND "A, B, C AND E" STYLES, RESPECTIVELY, FRONT DOOR LOCK ASSEMBLIES WHICH CAN BE USED FOR IDENTIFYING LOCKING PROBLEMS. DO NOT ATTEMPT REPAIRS TO CORRECT LOCK DISCREPANCIES. MAKE CORRECTIONS THROUGH REPLACEMENT OF LOCK ASSEMBLY.

### Removal and Installation

1. On "A,B,C and E" styles, raise door window and remove upper and lower portion of trim pad. On "F and X" styles remove door trim assembly and peel back the inner panel water deflector sufficiently to gain access to lock assembly.
2. Working through large access hole, disengage remote control to lock connecting rod at lock as specified under "Door Lock Spring Clips" in preceding "Front and Rear Door" section.

**NOTE:** On coupe styles, it may be necessary to remove inside locking rod, on other styles, it may be necessary to remove the remote control assembly and then remove the lock and connecting rod as an assembly.

3. On styles equipped with electric door locks, remove electric solenoid as described in "Front and Rear Door" section.
4. Remove three screws securing lock to door lock pillar ("12", Figure 5-48) and remove lock assembly from door.

**NOTE:** On four-door styles, the design of the lock to inside locking attaching clip does not allow disengagement of rod from lock with lock in an installed position. This rod can be removed from lock in a bench operation after removal of lock assembly.

5. To install, reverse removal procedure. Torque door lock attaching screws to 80 to 100 inch pounds.

## FRONT DOOR LOCK CYLINDER ASSEMBLY

### Removal and Installation

1. On "F and X" styles remove door trim pad. On "A,B,C and E" styles remove upper and lower portion of door trim assembly. Raise door window and detach inner panel water deflector.
2. With a screwdriver or other comparable tool, slide lock cylinder retaining clip (on door outer panel) out of engagement and remove lock cylinder from door (Fig. 5-71).
3. To install, reverse removal procedure.

### Disassembly and Assembly

1. Remove lock cylinder from door as previously described.
2. With a pointed tool, disengage pawl retaining clip and remove pawl (Fig. 5-72).
3. With a flat-bladed tool, straighten out crimped-over edges of lock cylinder housing scalp and remove scalp and lock cylinder from housing.

**NOTE:** Refer to General Information Index (Section 1 of this manual) for lock cylinder coding.

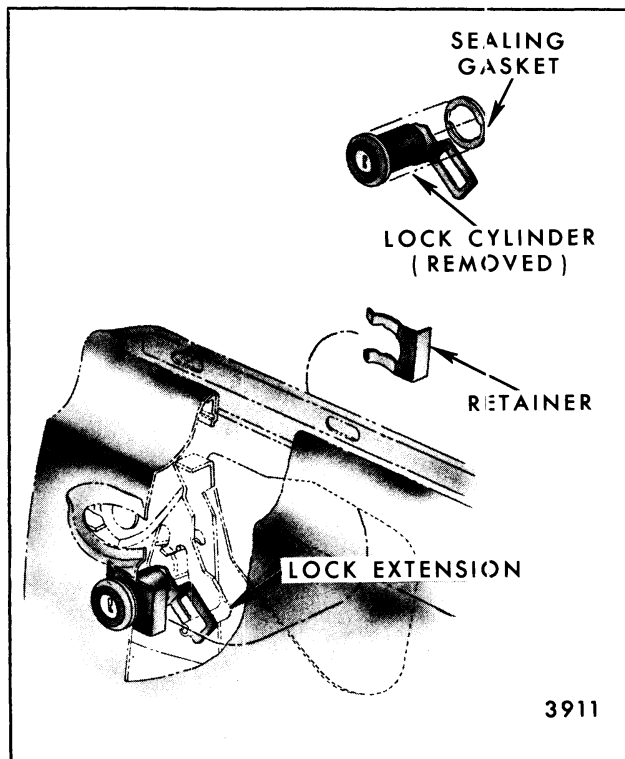


Fig. 5-71-Door Lock Cylinder Removal

- To install, reverse removal procedure.

**NOTE:** Lock cylinder housing scalp is usually damaged in removal procedure and, therefore, must be replaced. Replacement scalps are available as service parts.

## DOOR OUTSIDE REMOTE CONTROL MIRROR

### Description

The optional remote control mirror can be adjusted from the interior of the car by moving the remote control lever located on the left front door trim assembly in the direction desired.

### Remote Mirror Face Replacement - All Styles

- To remove a scratched, broken, stained, etc. mirror face from the mirror frame, break the mirror glass and remove the broken glass and fiber pad from the mirror frame.

**CAUTION:** Protect painted surface on door assembly when breaking mirror face to remove from mirror frame.

- Wipe inside of mirror frame clean.
- To install replacement mirror faces, remove paper backing from mirror face and center mirror in mirror frame. Then press firmly to ensure adhesion of the mirror face to the mirror frame.

### Removal and Installation - Chevrolet and Pontiac "F and X" Styles

- Remove door trim assembly and peel inner panel water deflector back sufficiently to gain access to remote mirror cable. Then detach remote cable from retaining tabs on inner panel reinforcement (refer to Fig. 5-73).
- Remove attaching screw in base of mirror and mounting bracket to door outer panel attaching screws (Fig. 5-71). Then, remove mirror and cable assembly from door.

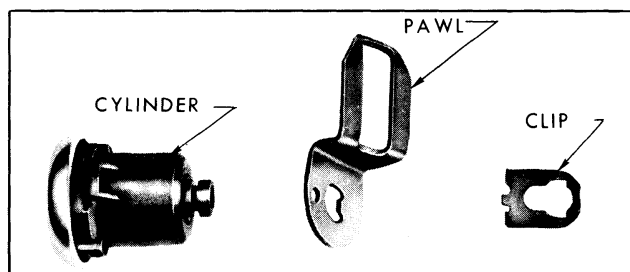


Fig. 5-72-Door Lock Cylinder Assembly

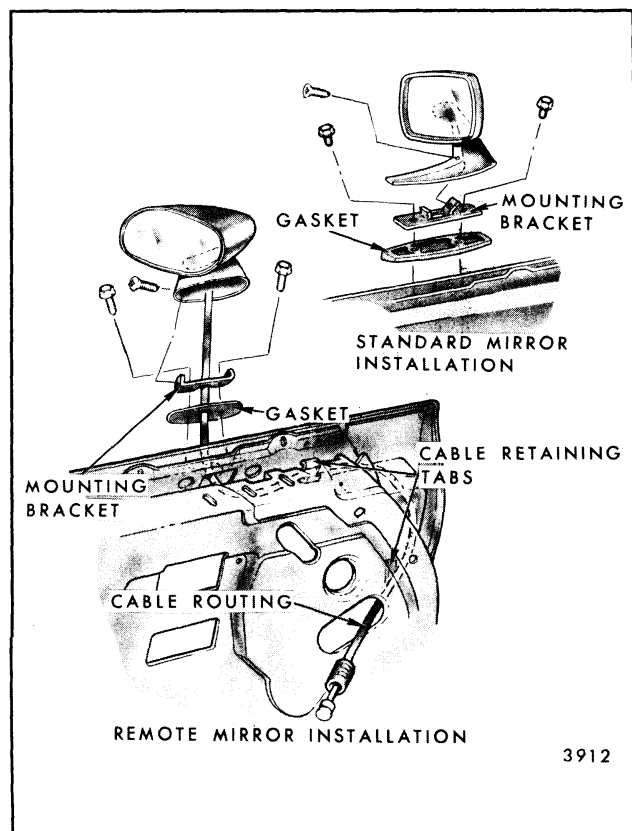


Fig. 5-73-Door Outside Remote Mirror Removal - "F and X" Styles

- To install, reverse removal procedure.

### Removal and Installation - "A,B,C and E" Styles

- Remove upper portion of door trim assembly as described in "Door Trim" portion of this section. Then, detach remote cable from retaining tab on outer panel belt reinforcement (Fig. 5-74).
- Remove mirror base to door outer panel stud nuts (Fig. 5-74) and remove mirror and cable assembly from door.
- To, install reverse removal procedure.

## DOOR OUTSIDE MIRROR - STANDARD MIRROR

### Removal and Installation - "F and X" Styles

- Remove attaching screw in base of mirror and remove mirror (Fig. 5-73).
- To install, reverse removal procedure.

### Removal and Installation - "A,B,C and E" Styles

1. Remove upper portion of door trim assembly as described in "Door Trim" portion of this manual.
2. Remove mirror base to door outer panel stud nuts (Fig. 5-74) and remove mirror from door.
3. To install, reverse removal procedure.

### FRONT DOOR INNER PANEL CAM - All Except "B, C and E" Two-Door Hardtop and Convertible Styles

#### Removal and Installation

1. On "F and X" styles, remove door trim assembly and detach inner panel water deflector sufficiently to gain access to the inner panel cam. On "A, B and C" styles remove upper and lower portion of door trim assembly.
2. With window in raised position, remove inner panel cam attaching bolts and slide cam off regulator balance arm roller ("11", Fig. 5-50 is typical of attachment for all styles).
3. To install, reverse removal procedure.

**NOTE:** The ends of the cam have provisions for up and down adjustment to correct a "cocked" window (not parallel with top of door upper frame or side roof rail weatherstrips).

### FRONT DOOR VENTILATOR ASSEMBLY OPTION - "X-69" Styles

#### Adjustment

A slight fore and aft adjustment of the ventilator division channel is available at the lower adjusting stud by loosening attaching nut and sliding stud in slot provided. The division channel can also be positioned in or out by loosening nut and turning stud in or out as required.

#### Removal and Installation

1. Remove door trim assembly and inner panel water deflector.
2. With window in "full-up" position loosen down stop support attaching bolt and remove support ("7", Fig. 5-52).

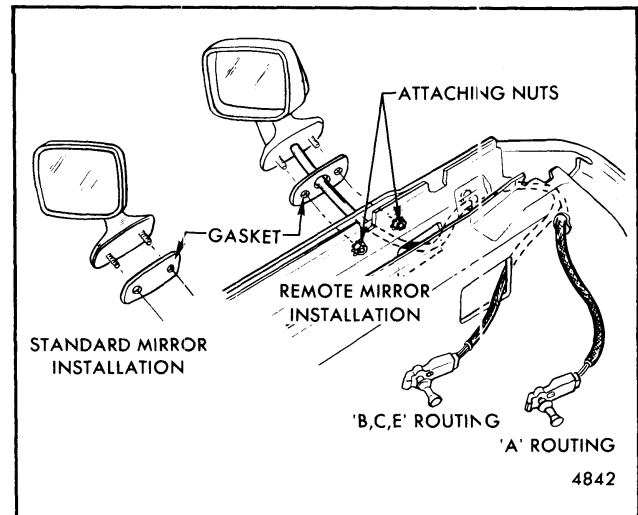


Fig. 5-74-Door Outside Mirror - Typical All "A, B, C and E" Styles

3. Lower door window and remove ventilator division channel lower adjusting stud nut and ventilator to door outer panel attaching screw (View "A" in Fig. 5-75).
4. Remove ventilator to door upper frame attaching screws (View "A" in Fig. 5-75).
5. Lift ventilator rearward and upward until lower forward corner of assembly is free of door upper frame (View "B" in Fig. 5-75).
6. Rotate ventilator assembly in an outboard movement and remove unit outboard of door upper frame (View "C" in Fig. 5-75).
7. To install, reverse removal procedure.

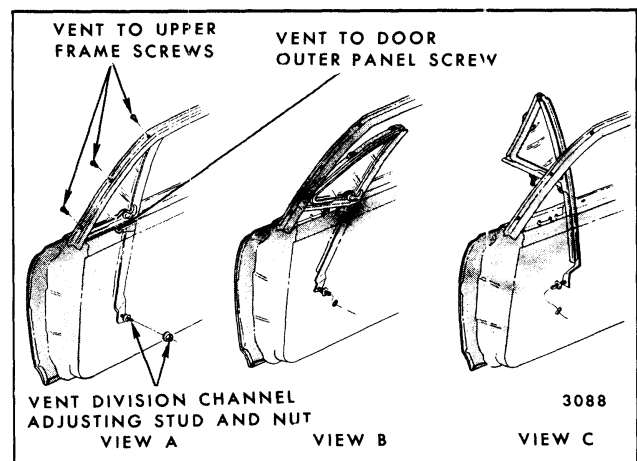


Fig. 5-75-Front Door Ventilator Removal - "X-69" Styles with Ventilator Option

## FRONT DOOR WINDOW ASSEMBLY - "X-69" Styles with Optional Ventilator

### Description

The front door window assembly consists of a frameless piece of solid tempered safety plate glass pressed into a thin section lower sash channel. When cycled, the glass operates within the ventilator division channel and window glass run channel.

### Adjustments

1. To adjust lower portion of ventilator division channel for proper alignment with door window assembly, lower door window and loosen ventilator adjusting stud nut (Fig. 5-76). Turn adjusting stud in or out or position lower end of channel fore or aft as required; then, tighten adjusting stud nut.

### Removal and Installation

1. Remove front door ventilator assembly as previously described.
2. Slide window lower sash channel cam off window regulator lift arm roller. Remove window inboard of door upper frame.

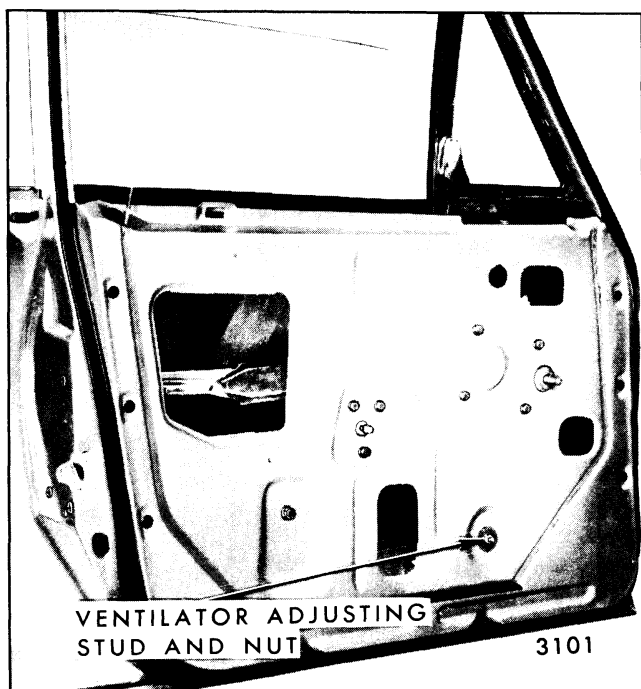


Fig. 5-76-Front Door Window Removal and Adjustment - "X-69" Styles with Optional Ventilator

3. To install, reverse removal procedure. Adjust window for proper alignment as subsequently described.

## FRONT DOOR WINDOW ASSEMBLY - "A-29,35" Styles

### Description

The front door window assembly consists of a solid tempered safety plate window with an individually bolted-on roller at the rear and an up-travel stop and glass stabilizer plate at the front. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-77 is an exploded view of the front door window assembly and identifies the various components and their assembly sequence.

**NOTE:** When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers and washers ("6" and "7", Fig. 5-77).

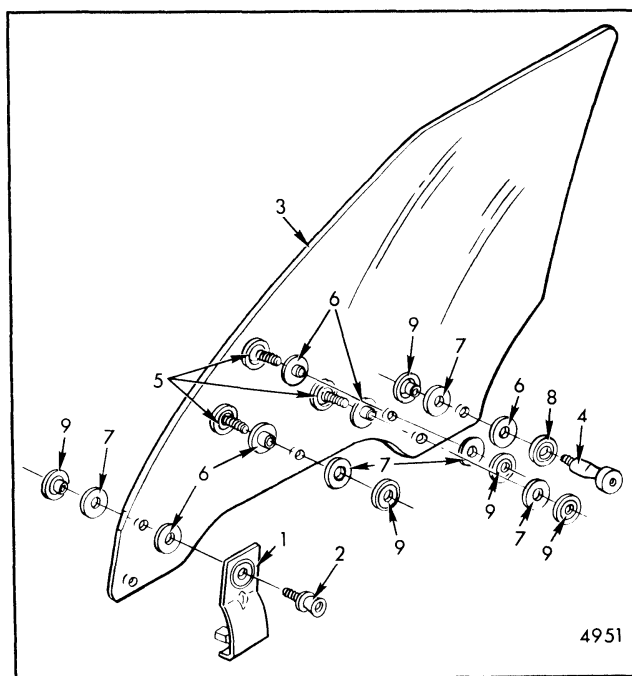


Fig. 5-77-Front Door Window Assembly - "A-29,35" Styles

- |                                      |                     |
|--------------------------------------|---------------------|
| 1. Front Door Glass Stabilizer Plate | 5. Bolt             |
| 2. Up-Travel Stop                    | 6. Spacer           |
| 3. Window Glass                      | 7. Washer (Plastic) |
| 4. Window Roller                     | 8. Washer (Metal)   |
|                                      | 9. Nut              |

## Diagnosis and Adjustments

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening the front and rear up-travel stops ("2" and "3", Fig. 5-82) and inner panel cam attaching bolts ("8", Fig. 5-82) and raising or lowering front edge of glass in relation to roof rail, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, tighten inner panel cam attaching bolts and raise glass to desired height to establish proper contact with the side roof rail weatherstrip. Tighten up-travel stop bolts. Torque attachment components to 60 to 90 inch pounds.
2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE OF GLASS IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of window in or out in relation to side roof rail weatherstrip, loosen front and rear up-travel stops ("2" and "3", Fig. 5-82), belt trim support retainers ("1", Fig. 5-82), front door window stabilizer guide assembly ("1", Fig. 5-82) and front door glass stabilizer adjusting stud ("7", Fig. 5-82). Turn adjusting stud counterclockwise until bearing stud is out of contact with bearing surface on glass. Loosen front door window upper guide support attaching bolts ("4", Fig. 5-82) and position guide further inboard or outboard as required. Outboard adjustment at this location moves the door window upper edge inboard. Conversely, inboard adjustment moves the top of the glass outboard. After making adjustment, torque previously loosened components to 60 to 90 inch pounds.
3. **WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear upper stops ("2" and "3", Fig. 5-82) and operate window to desired up position to establish proper contact with the side roof rail weatherstrip. Torque stop bolts to 60 to 90 inch pounds.
4. **WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and glass stability depends on the adjustment of the belt trim support retainers ("1", Fig. 5-82) and front door glass stabilizer adjusting stud ("10", Fig. 5-82). A binding door glass can be relieved by adjusting the belt trim support retainers "1" outboard until they lightly contact the door window glass. Align the stabilizer adjusting stud by turning the stud clockwise to increase pressure against the bearing surface and counterclockwise to reduce pressure against the bearing surface. The adjust-

ing stud should contact the bearing surface firmly to maintain glass stability without binding the door glass. Torque belt trim support retainer attachments to 60 to 90 inch pounds.

5. **WINDOW TOO FAR FORWARD OR REARWARD (NOT CENTERED IN WINDOW OPENING) IN RELATION TO WINDSHIELD OR CENTER PILLAR WEATHERSTRIP** - To center an otherwise properly adjusted door glass in its opening, loosen front door window rear guide assembly upper attaching screws ("5", Fig. 5-82) and moving the glass forward or rearward until the glass is centered in its opening torque upper guide attachments to 60 to 90 inch pounds.
6. **WINDOW TOO HIGH OR LOW WHEN IN A DOWN POSITION IN RELATION TO DOOR BELTLINE** - To adjust window down-travel, loosen down-travel support attaching screw ("11", Fig. 5-82) and lower or raise window to be flush with door outer belt sealing strip. Raise down-travel support into contact with window lower sash channel cam and torque down-travel support attaching screw to 60 to 90 inch pounds.

**NOTE:** After any adjustment has been performed all previously loosened hardware attachments must be torqued to 60 to 90 inch pounds.

## GLASS ALIGNMENT GAUGE BLOCKS - "A-29, 35" Styles

With a new design for the "A-29,35" styles, the door glass must be properly centered within a "fixed" window opening. To consistently locate the window glass to its specified alignment, glass alignment gauge blocks (tool J-24350 or equivalent) have been released for service use.

The following procedure outlines proper use of glass alignment gauge block tool J-24350 (or equivalent) as shown in Figure 5-78.

1. Remove upper and lower sections of door trim assembly and inner panel water deflector as described in "Front and Rear Doors" and "Door Trim" portions of this section.
2. Detach side roof rail weatherstrip plastic fasteners at lower front and rear corners and carefully remove weatherstrip from retainer.
3. Lower front door glass and install gauge blocks, tool J-24350 -2 (green) or equivalent, into side roof rail weatherstrip retainer above and in from upper front and rear corners of glass as shown

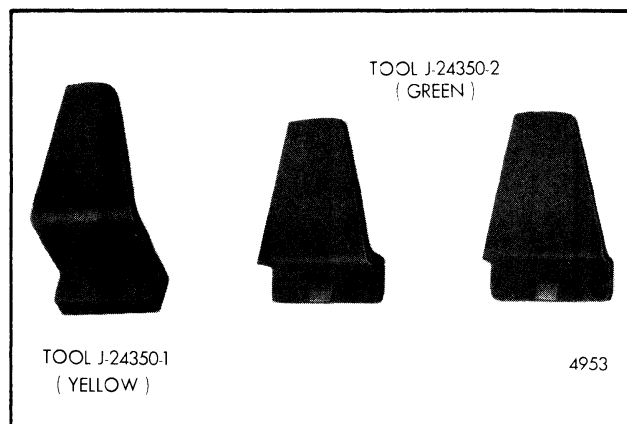


Fig. 5-78-Glass Alignment Gauge Blocks - Tool J-24350  
(Consists of a Set of Three Blocks)

in Figure 5-79. Install glass suction cups on interior surface of glass (Fig. 5-79) to enable adjuster to shift glass when making adjustment with door in a closed position.

**NOTE:** When installing gauge blocks (green) or equivalent into upper retainer, handle portion of blocks must protrude inboard (Fig. 5-79). Also, grooves on sides of blocks must be fully engaged with side roof rail weatherstrip retainer.

4. Working from inside of body with door in a closed position, loosen front and rear up-travel stops ("2" and "3", Fig. 5-82), belt trim support retainers ("1", Fig. 5-82), front door window stabilizer guide assembly ("7", Fig. 5-82) and front door glass stabilizer adjusting stud ("10", Fig. 5-82). To loosen adjusting stud, turn adjusting stud "10" counterclockwise until bearing stud is out of contact with bearing surface of glass.
5. Raise door window to approximately 1" from full-up position as shown in Figure 5-86. If spacing between upper edge of glass and front and rear gauge blocks is equal (refer to Fig. 5-79)

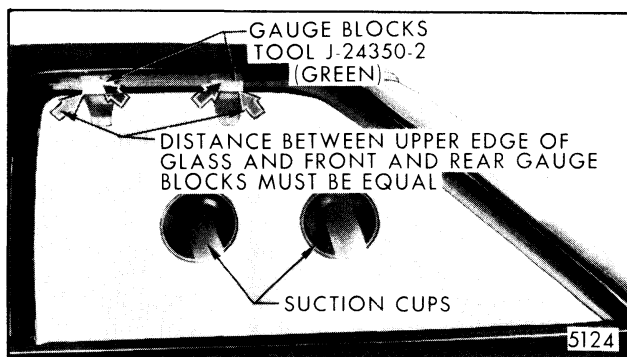


Fig. 5-79-Front Door Window Adjustment (Rotated "Cocked" Glass in Body Opening)

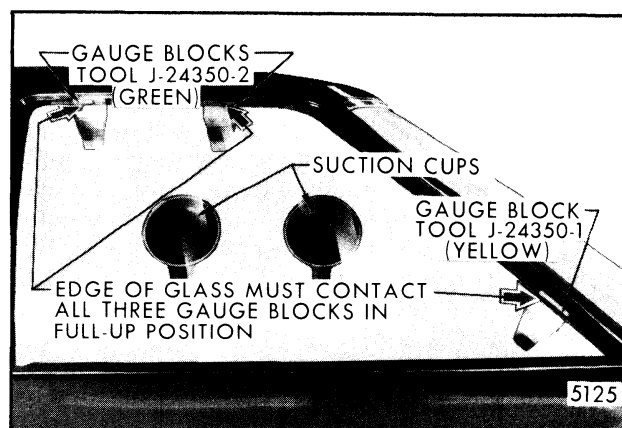


Fig. 5-80-Front Door Window Adjustment (Fore and Aft Adjustment)

proceed with next step. If spacing is unequal, loosen inner panel cam attaching screws ("8", Fig. 5-82) and adjust as necessary. When proper adjustment is made, tighten attaching bolts.

6. Lower glass and install gauge block, tool J-24350-1 (yellow) or equivalent, into the windshield pillar retainer slightly above beltline (Fig. 5-80). Make certain handle portion of block is inboard and grooves on side of block are fully engaged with retainer.

Raise door window assembly until contact is established between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-80), proceed with Step 7. If upper and forward edge of glass does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment of rear guide assembly ("5", Fig. 5-82) and position glass forward or rearward until

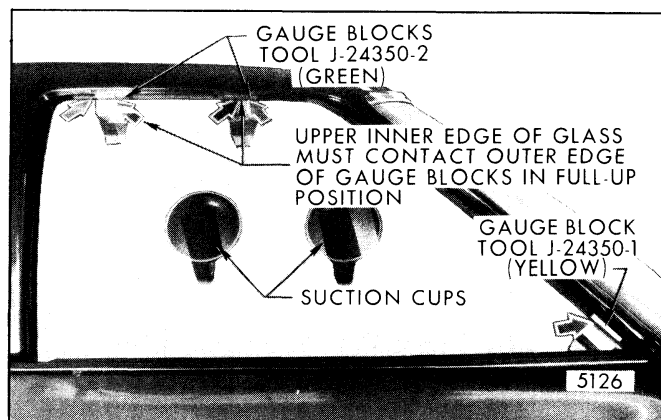


Fig. 5-81-Front Door Window Adjustment (In and Out and Up-Travel Adjustment)

edge of glass contacts all three gauge blocks in full-up position. Re-tighten rear guide attaching screws ("5", Fig. 5-82).

7. Completely loosen front door window upper guide support attaching bolts ("4", Fig. 5-82). Apply firm outboard pressure against guide support at attaching bolt location to remove slack in system and to hold upper inner edge of glass inboard against outer edge of tab on gauge block. Tighten attaching bolts of upper guide support (Fig. 5-81).
8. With glass in full-up position against gauge blocks, perform the following adjustments in the following order:
  - A. Move from door belt trim support retainer assemblies ("1", Fig. 5-82) outboard until they lightly contact door glass, then tighten.
  - B. Lower front and rear up-stops ("2" and "3", Fig. 5-82) down into contact with door glass stops and tighten.
  - C. Position front door window stabilizer guide assembly (on inner panel) "7", Figure 5-82 and tighten.
9. Open door with glass full-up and turn door glass stabilizer adjusting studs ("10", Fig. 5-82) clockwise until snug contact is made with bearing surface on door glass.
10. Lower door glass full down to make sure top edge of door glass is flush with door inner and outer belt sealing strips. If window is too high or low in relation to beltline, loosen down-travel support attaching screw ("11", Fig. 5-82) and properly flush top edge of glass. Raise down-travel stop into contact with window regulator sash cam and re-tighten down-stop attaching bolt.
11. After all adjustments have been performed, torque all previously loosened hardware attaching nuts and bolts to 60 to 90 inch pounds.
12. Remove gauge blocks from weatherstrip retainer and reinstall and seal weatherstrip with a pumpable sealer.
13. Reinstall previously removed trim and water deflector.

## FRONT DOOR WINDOW ASSEMBLY

### Removal and Installation

1. Remove upper and lower portion of door trim

assembly and inner panel water deflector, as previously described.

2. Mark location of attaching bolts, and remove the following components:
  - A. Front and rear belt trim support retainers "1", Figure 5-82.
  - B. Front and rear up-travel stops "2" and "3", Figure 5-82.
  - C. Stabilizer guide assembly (on inner panel) "7", Figure 5-82.
3. Operate window to a one-half up position and remove front and rear lower sash channel cam attaching nuts ("12" and "13", Fig. 5-82). Then raise glass to full-up position and remove lower sash channel cam center attaching nut ("14", Fig. 5-82).

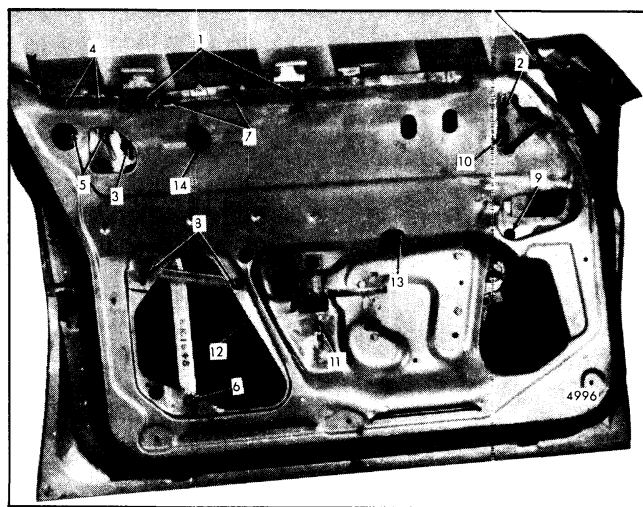


Fig. 5-82-Front Door Window Removal and Adjustments - "A-29,35" Styles

- |  |   |
|--|---|
| 1. Belt Trim Support Retainer Attaching Screws                 | 8. Inner Panel Cam Attaching Screws                             |
| 2. Front Up-Travel Stop Attaching Screw                        | 9. Glass Stabilizer Plate Attaching Screws                      |
| 3. Rear Up-Travel Stop Attaching Screw                         | 10. Glass Stabilizer Adjusting Stud                             |
| 4. Rear Guide Upper Bracket Attaching Screws                   | 11. Down-Travel Support Attaching Screw                         |
| 5. Rear Guide Upper Attaching Screws                           | 12. Lower Sash Channel Cam to Glass Rear Attaching Nut Access   |
| 6. Rear Guide Lower Attaching Screw                            | 13. Lower Sash Channel Cam to Glass Front Attaching Nut Access  |
| 7. Stabilizer Guide Assembly (On Inner Panel) Attaching Screws | 14. Lower Sash Channel Cam to Glass Center Attaching Nut Access |



4. Mark location and remove upper and lower rear guide to door inner panel attaching bolts ("4" and "6", Fig. 5-82). Disengage guide from roller and lay guide in bottom of door.
5. Tip top of glass inboard until rear roller is clear of inner panel belt reinforcement, lift glass straight up and out of door.
6. To install, reverse removal procedure. Install previously removed attachments to the marked locations for proper glass alignment.
7. Torque glass to lower sash cam attaching nuts to 72 inch pounds. Torque all other previously removed attachments to 60 to 90 inch pounds.

## FRONT DOOR WINDOW ASSEMBLY - "A-37,57,80" Styles

### Description

The front door window assembly consists of a solid tempered safety plate glass window, with individually bolted-on stabilizer at the rear, roller in the center and up-travel stop and stabilizer plate at the front. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-83 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

**NOTE:** When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers and washers ("6" and "7", Fig. 5-83).

### Diagnosis and Adjustments

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", 5-84) and inner panel cam attaching bolts ("8", Fig. 5-84) and raising or lowering front edge of glass in relation to rear edge of glass, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, tighten inner panel cam attaching bolts and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Tighten up-travel stop bolts. Torque previously loosened components to 60 to 90 inch pounds.

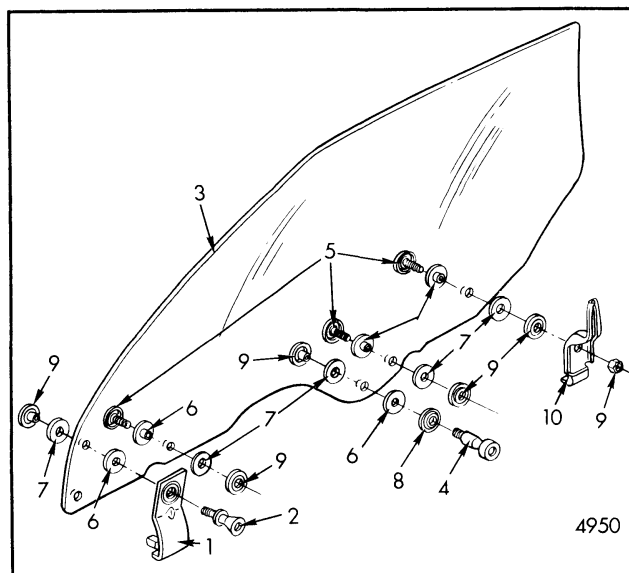


Fig. 5-83-Front Door Window Assembly "A-37, 57 and 80" Styles

- |                           |                                 |
|---------------------------|---------------------------------|
| 1. Glass Stabilizer Plate | 7. Washer (Plastic)             |
| 2. Up-Travel Stop         | 8. Washer (Metal)               |
| 3. Window Glass           | 9. Nut                          |
| 4. Window Roller          | 10. Glass Stabilizer (On Glass) |
| 5. Bolt                   |                                 |
| 6. Spacer                 |                                 |
2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of window in or out in relation to side roof rail weatherstrip, loosen front and rear up-travel stops ("2" and "3", Fig. 5-84), belt trim support retainers ("1", Fig. 5-84), front door window stabilizer guide assembly ("7", Fig. 5-84) and front door glass stabilizer adjusting stud ("9", Fig. 5-84). To loosen adjusting stud turn counterclockwise until bearing stud is out of contact with bearing surface on glass. Loosen front door window upper guide support attaching bolts ("4", Fig. 5-84) and position guide inboard or outboard as required. Outboard adjustment of the guide assembly moves upper edge of glass inboard. Conversely, inboard adjustment moves the upper edge of glass outboard. After making adjustment, properly position and torque previously loosened components to 60 to 90 inch pounds.
  3. **WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear up-travel stops ("2" and "3", Fig. 5-84) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop bolts to 60 to 90 inch pounds.

4. **WINDOW TOO HIGH OR LOW WHEN IN A DOWN POSITION IN RELATION TO THE BELTLINE** - To adjust window down-travel, loosen window down-travel support ("10", Fig. 5-84) and lower or raise window to be flush with door outer belt sealing strip. Then, position support against lower sash channel cam and torque support attaching bolt to 60 to 90 inch pounds.
5. **WINDOW TOO FAR FORWARD OR REARWARD IN RELATION TO ADJACENT PILLAR WEATHERSTRIPS (GLASS NOT CENTERED IN WINDOW OPENING)** - To adjust window forward or rearward, centering it in the window opening, loosen front door window upper bracket attaching screws ("4", Fig. 5-84) and reposition glass as necessary. When glass is centered in its opening, tighten guide bracket attaching bolts, and torque to 60 to 90 inch pounds.
6. **WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depend to a great extent on the adjustment of the window belt trim support retainers at the belt-line ("1", Fig. 5-84) and front door window stabilizer adjusting stud ("9", Fig. 5-84).

A binding door glass can be corrected by adjusting the belt trim support retainers outboard until they lightly contact the window. Adjust the stabilizer adjusting stud by turning the stud clockwise to increase pressure against the bearing surface and counterclockwise to reduce pressure against the bearing surface. The adjusting stud should contact the bearing surface firmly to maintain glass stability without binding the window.

**NOTE:** After any adjustment has been performed, all previously loosened hardware attachments must be torqued to 60 to 90 inch pounds.

### GLASS ALIGNMENT GAUGE BLOCKS - "A-37, 57, and 80" Styles

With a new design for the "A" coupe styles, the door glass must be properly centered within a "fixed" window opening. To consistently locate the window glass to its specified alignment, glass alignment gauge blocks, tool J-24350 (or equivalent) has been released for service use.

For proper use of gauge blocks (Fig. 5-85) refer to the following procedure:

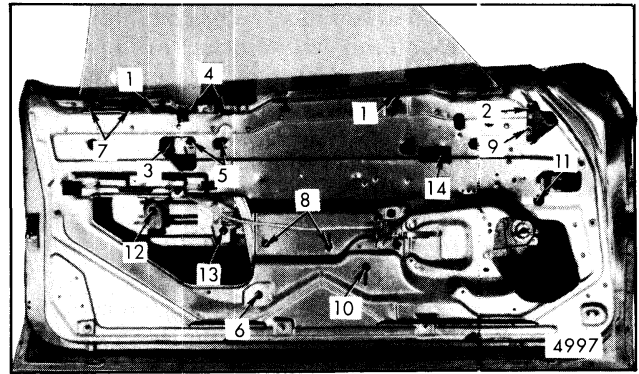


Fig. 5-84-Front Door Window Removal and Adjustment - "A-37, 57 and 80" Styles

- |  |   |
|--|---|
| 1. Belt Trim Support Retainer Attaching Screws                 | 8. Inner Panel Cam Attaching Screws   |
| 2. Front Up-Travel Stop Attaching Screw                        | 9. Glass Stabilizer Adjusting Stud  |
| 3. Rear Up-Travel Stop Attaching Screw                         | 10. Down-Travel Support Attaching Screw                                     |
| 4. Rear Guide Upper Bracket Attaching Screws                   | 11. Glass Stabilizer Plate (On Reinforcement) Attaching Screw               |
| 5. Rear Guide Upper Attaching Screws                           | 12. Lower Sash Channel Cam and Stabilizer Guide to Glass Rear Attaching Nut |
| 6. Rear Guide Lower Attaching Screw                            | 13. Lower Sash Channel Cam to Glass Center Attaching Nut                    |
| 7. Stabilizer Guide Assembly (On Inner Panel) Attaching Screws | 14. Lower Sash Channel Cam to Glass Front Attaching Nut Access              |

### Adjustment

1. Remove upper and lower portion of door trim assembly and inner panel water deflector, as previously described.

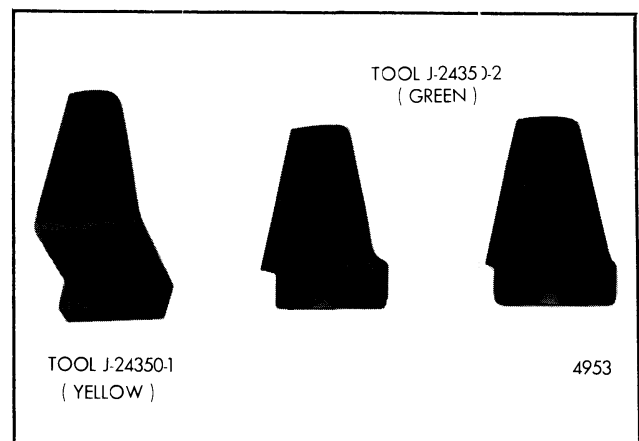


Fig. 5-85-Glass Alignment Gauge Blocks - Tool J-24350 (Consists of a Set of Three Blocks)

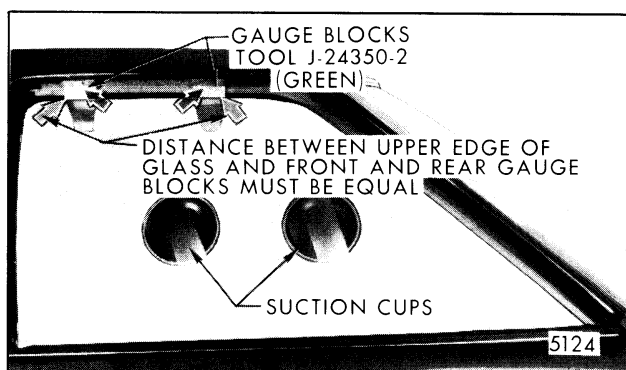


Fig. 5-86-Front Door Window Alignment (Rotated "Cocked Glass" in Body Opening Adjustment)

2. Remove plastic fasteners, detach side roof rail weatherstrip at lower front and rear corners and carefully remove from retainer.
3. Lower front door window and install gauge blocks, tool J-24350-2 (green) or equivalent into side roof rail weatherstrip retainer above and in from upper front and rear corners of glass as shown in Figure 5-86. Install glass suction cups on interior surface of glass (Fig. 5-86) to enable adjuster to shift glass when making adjustments with door in a closed position.

**NOTE:** When installing gauge blocks into retainer, handle portion of blocks must protrude inboard (Fig. 5-86). Also, grooves on sides of gauge blocks must be fully engaged with side roof rail weatherstrip retainer.

4. Working from inside body, with door in closed position, loosen the following attachments:

A. Front and rear up-travel stops ("2" and "3", Fig. 5-84).

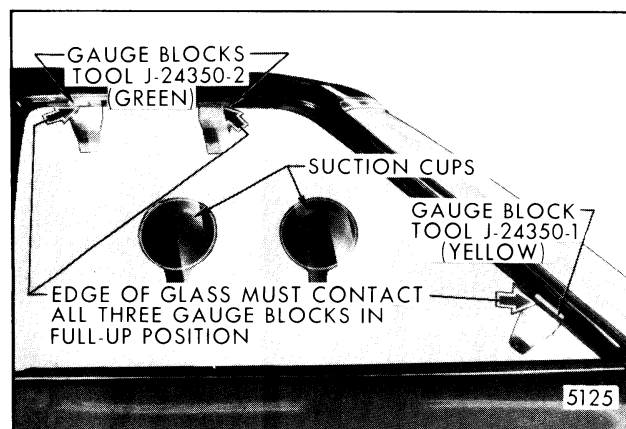


Fig. 5-87-Front Door Window Alignment (Fore and Aft Adjustment)

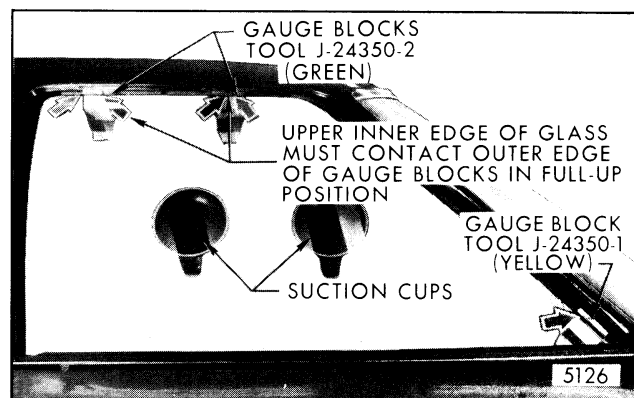


Fig. 5-88-Front Door Window Alignment (In and Out and Up-Travel Adjustment)

- B. Belt trim support retainers ("1" of Fig. 5-84).
- C. Front door stabilizer guide assembly (on inner panel), Item "7" of Figure 5-84.
- D. Front door glass stabilizer adjusting stud ("9", Fig. 5-84). To loosen adjusting stud "9" turn counterclockwise until bearing stud is out of contact with bearing surface of door glass.
5. Raise door window assembly to approximately 1" from full -up position as shown in Figure 5-79. If spacing between upper edge of glass and front and rear gauge blocks is equal, as shown in Figure 5-79, proceed with next step. If spacing is unequal, loosen inner panel cam attaching bolts ("8", Fig. 5-84) and adjust to equalize spacing. When adjustment is correct, tighten attaching bolts.
6. Lower glass and install gauge block, tool J-24350-1 (yellow) or equivalent, into the windshield pillar retainer slightly above beltline (Fig. 5-80). Make certain handle portion of block is inboard and grooves on side of block are fully engaged with retainer. Raise door window assembly until contact is made between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contact all three gauge blocks at the same time (as shown in Fig. 5-80), proceed with Step 7. If, however, upper and forward edge of glass does not contact all three blocks simultaneously, completely loosen fore and aft adjustment of rear guide upper attaching screws ("5", Fig. 5-84) and position glass forward or rearward until edge of glass contacts all three gauge blocks in full-up position. Retighten guide assembly attaching bolts ("5", Fig. 5-84).

7. Completely loosen front door window upper guide support attaching bolts ("4", Fig. 5-84). Apply firm outboard pressure against guide support at attaching bolt location to remove slack in system and to hold inner edge of glass against outer edge of tab on gauge block (Fig. 5-81). Tighten attaching bolts of upper guide support.
8. With glass in full-up position nested in gauge blocks, perform the listed adjustments in the following order:
  - A. Move front and rear belt trim support retainers ("1", Fig. 5-84) outboard until they lightly contact door glass, then tighten.
  - B. Lower front and rear up-travel stops "2" and "3", Figure 5-84 until they firmly contact door glass stops and tighten.
  - C. Position front door stabilizer guide assembly (on inner panel) "7", Figure 5-84 and tighten.
9. Open door with glass full-up and turn door glass stabilizer and adjusting stud "9", Figure 5-84 clockwise until snug contact is made with bearing surface on door glass.
10. Lower door glass full-down to make sure top edge of door glass is flush with door inner and outer belt sealing strips. If window is too high or low in relation to beltline, loosen down-travel support attaching screw ("10", Fig. 5-84) and properly flush top edge of glass. Raise down-travel stop into contact with front door window lower sash channel cam and re-tighten down stop attaching bolt.
11. After all adjustments have been performed, torque all previously loosened hardware attachment components to 60 to 90 inch pounds.
12. Remove gauge blocks from weatherstrip retainer, reinstall and seal weatherstrip with a pumpable sealer.
13. Install previously removed trim and water deflector.
3. Remove lower sash channel cam to glass center attaching nut ("13", Fig. 5-84).
4. Remove rear guide upper bracket ("4", Fig. 5-84) and lower guide ("6", Fig. 5-84) attaching screws, disengage guide from roller, and lay guide in bottom of door.
5. Remove lower sash channel cam to glass front attaching nut ("14", Fig. 5-84).
6. Separate glass from lower sash channel cam. While holding glass securely, lower sash channel cam to clear up-stop and stabilizer (on glass).
7. Tip top of glass inboard until rear roller is clear of inner belt reinforcement, then lift glass straight out of door.
8. To install, reverse removal procedure. Adjust window for proper alignment and operation as previously described.
9. Torque all previously loosened or removed attaching nuts to 72 inch pounds. Torque all attaching screws to 60 to 90 inch pounds.

## FRONT DOOR WINDOW ASSEMBLY - "B" Closed Styles

### Description

The front door window assembly consists of a solid tempered safety plate glass window and an individually bolted-on roller at the rear. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

**NOTE:** When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers.

### Diagnosis and Adjustment

1. WINDOW NOT PARALLEL ALONG UPPER EDGE WITH DOOR UPPER FRAME - A rotated window condition (glass cocked in opening) can be corrected by loosening door window inner panel cam attaching bolts ("6", Fig. 5-89) and raising or lowering front edge of glass in relation to rear edge of glass, as required, to parallel upper edge of glass with door upper frame. Torque inner panel cam attaching bolts to 60 to 90 inch pounds.

### Removal and Installation - Front Door Window

1. Remove upper and lower door trim assembly and inner panel water deflector.
2. With glass in a half raised position, remove front and rear up-travel stops ("2" and "3", Fig. 5-84), front and rear belt trim support retainers ("1", Fig. 5-84) and stabilizer guide assembly on inner panel and door glass ("7" and "12", Fig. 5-84).

2. **WINDOW TOO HIGH OR TOO LOW, WHEN IN A DOWN POSITION, IN RELATION TO THE BELTLINE** - To adjust window down-travel, loosen window down-travel bumper support ("7", Fig. 5-89) and raise or lower window to desired full-down glass height. Then, position bumper support against lower edge of glass and tighten attaching bolts to 60 to 90 inch pounds.
3. **WINDOW MECHANISM BINDS WHEN OPERATING** - The rear guide is adjustable in and out ("3", Fig. 5-89) and fore and aft ("4", Fig. 5-89) to relieve a binding door window assembly. In addition, excessive outboard adjustment of the belt trim support retainers ("1", Fig. 5-89) may result in a binding window. The belt trim support retainers should be adjusted outboard until they lightly contact the door window.

**NOTE:** After any adjustment has been performed, all previously loosened hardware attachments must be torqued to 60 to 90 inch pounds.

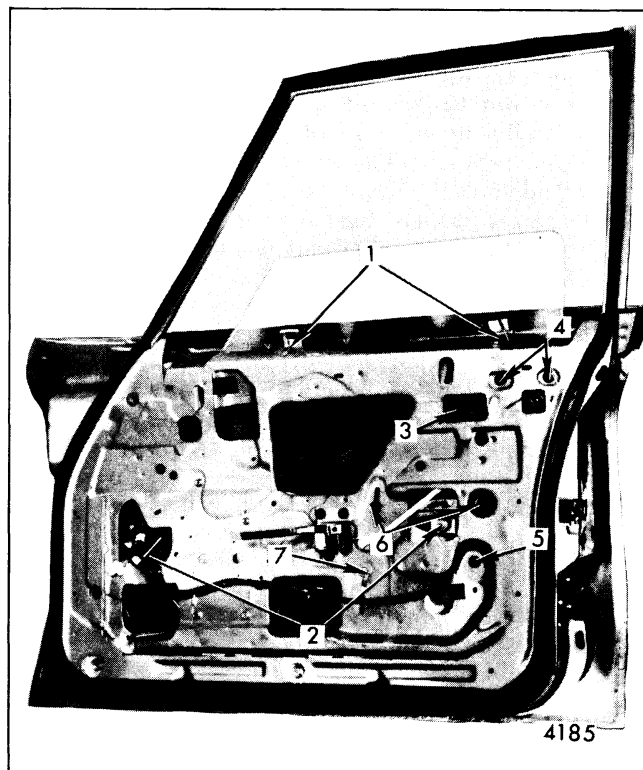


Fig. 5-89-Window Removal and Adjustment - "B" Closed Styles

### Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Loosen window belt trim support retainers ("1", Fig. 5-89).
3. Operate window to a three-quarter-down position and remove window lower sash channel cam to glass attaching stud nuts ("2", Fig. 5-89). Tilt front edge of glass downward and remove window inboard of door upper frame.
4. To install, reverse removal procedure. Adjust glass for proper alignment and operation by performing the subsequent procedure. Torque lower sash channel cam attaching nuts to 72 inch pounds.

### FRONT DOOR WINDOW ASSEMBLY - "B, C and E" Two-Door Hardtop and Convertible Styles

#### Description

The front door window assembly consists of a solid tempered safety plate glass window, with a bolted-on

- |  |   |
|--|---|
| 1. Window Belt Trim Support Retainers      | 4. Window Rear Guide Bracket to Inner Panel Bolts |
| 2. Window Lower Sash Channel Cam           | 5. Window Rear Guide Lower Bolt                   |
| 3. Window Rear Guide Channel Cam           | 6. Inner Panel Cam Bolts                          |
| Attaching Stud Nut Access Holes            | 7. Window Down-Travel Support Bracket Bolt        |
| 3. Window Rear Guide to Guide Bracket Bolt |   |

lower sash guide plate assembly, which operates on a single vertical guide tube located in the center of the door.

Figure 5-90 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

**NOTE:** When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers and washer.

#### Diagnosis and Adjustments

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-

travel stops ("3" and "4", Fig. 5-91) and lower sash upper guide attaching nuts ("7", Fig. 5-91) and raising or lowering front edge of glass in relation to rear edge of glass, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, torque lower sash upper guide attaching nuts to 72 inch pounds and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Torque up-travel stop bolts to 60 to 90 inch pounds.

**2. WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of

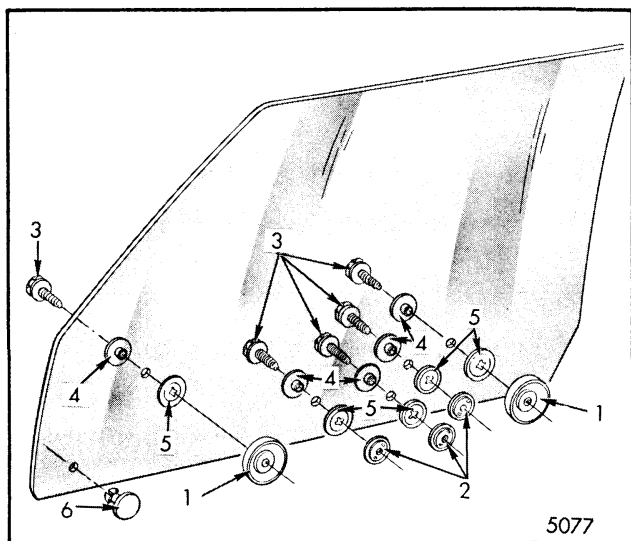


Fig. 5-90-Front Door Window Assembly - "B, C and E" Two-Door Hardtop and Convertible Styles

- |                               |                            |
|-------------------------------|----------------------------|
| 1. Stop, Up-Travel (On Glass) | 4. Spacer                  |
| 2. Nut                        | 5. Washer                  |
| 3. Bolt                       | 6. Fastener, Glass Bearing |

window in or out in relation to side roof rail weatherstrip. Remove front door window guide pin stabilizer attaching bolts and remove pin stabilizer ("13", Fig. 5-91). Loosen lower sash lower guide bolts ("8", Fig. 5-91) and front and rear belt trim support retainer bolts ("5", Fig. 5-91) and position guide inboard or outboard as required. Outboard adjustment of the guide assembly moves upper edge of glass inboard. Conversely, inboard adjustment moves the upper edge of glass outboard. With glass in a full-up position, position stabilizer strip against inner surface of glass and tighten attaching bolts. Reinstall guide pin stabilizer through guide support. Adjust pin inboard to gain firm contact

with guide support, then reinstall and tighten attaching bolts. Torque all previously loosened attaching bolts to 60 to 90 inch pounds.

**3. WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear up-travel stops ("3" and "4", Fig. 5-91) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop bolts to 60 to 90 inch pounds.

**4. WINDOW TOO HIGH OR LOW WHEN IN A DOWN POSITION IN RELATION TO THE BELTLINE** - To adjust window down-travel, loosen front and rear window down-travel bumper supports ("1" and "2", Fig. 5-91) and lower or raise window to desired full-down glass height. Then, position front and rear bumper against lower edge of glass and torque bumper support attaching bolts to 60 to 90 inch pounds.

**5. WINDOW TOO FAR FORWARD OR REARWARD IN RELATION TO PILLAR WEATHERSTRIP OR ADJACENT BODY GLASS** - To adjust window forward or rearward, loosen lower sash guide plate bolts ("6", Fig. 5-91) and reposition glass as necessary. The guide plate to glass attaching locations are slotted to permit fore and aft adjustment of the glass. Torque lower sash guide plate attaching bolts to 72 inch pounds.

**6. WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depend to a great extent on the adjustment of the belt trim support retainers at the belt-line ("5", Fig. 5-91), the glass bearing plate ("9" and "10", Fig. 5-91) and the guide pin stabilizer ("13", Fig. 5-91). The belt trim support retainers ("5") should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation. The glass bearing plate is adjustable in and out and should contact a glass bearing button (on glass) when glass is in a full-up position. After previous adjustments have been performed, adjust the guide pin stabilizer "13" into contact with the guide support and tighten attaching bolts. Torque all previously loosened attachment components to 60 to 90 inch pounds.

## GLASS ALIGNMENT GAUGE BLOCKS - ("B, C and E" Two-Door Hardtop Styles)

With the incorporation of a single vertical guide tube in the center of the door most window adjustments are made from a guide plate attached to the lower

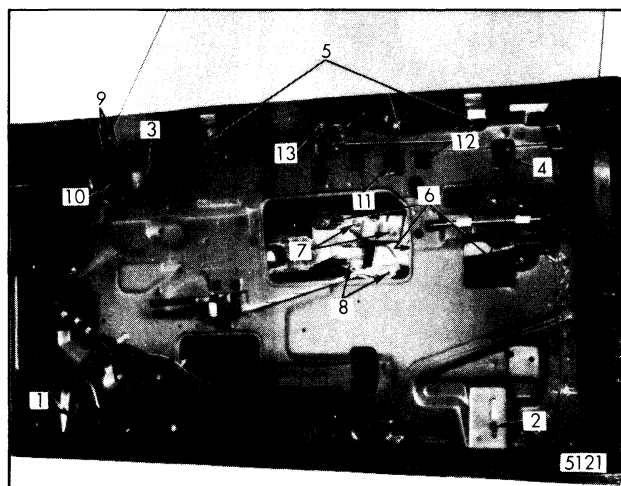


Fig. 5-91-Front Door Window Removal and Adjustment - "B, C and E" Two-Door Hardtop and Convertible Styles

- |   |   |
|---|---|
| Support, Front Window Bumper Bolt         | 9. Glass Bearing Plate to Inner Panel Bolts   |
| 2. Support Rear Window Bumper Bolt        | 10. Glass Bearing Plate Adjusting Stud  |
| 3. Stop, Front Up-Travel Bolt Location    | 11. Guide Assembly, Lower Sash Upper Adjustment Access Hole (Rotated "Cocked" Glass Adjustment) |
| 4. Stop, Rear Up-Travel Bolt Location     | 12. Plate Assembly, Lower Sash Guide Adjustment Access Hole (Fore and Aft Adjustment)           |
| 5. Belt Trim Support Retainers            | 13. Window Guide Pin Stabilizer Attaching Bolts   |
| 6. Plate Assembly, Lower Sash Guide Bolts |   |
| 7. Guide Assembly, Lower Sash Upper Bolts |   |
| 8. Guide Assembly, Lower Sash Lower Bolts |   |

edge of the glass (Fig. 5-92). Fine adjustment of this glass is more sensitive than conventional styles utilizing front and rear guides, as relatively small movements at adjusting locations will result in large movements at the upper edge of glass.

To facilitate adjustment of this glass, use glass alignment gauge blocks tool J-23711 or equivalent (Fig. 5-93). For proper use of gauge blocks, refer to the following procedure:

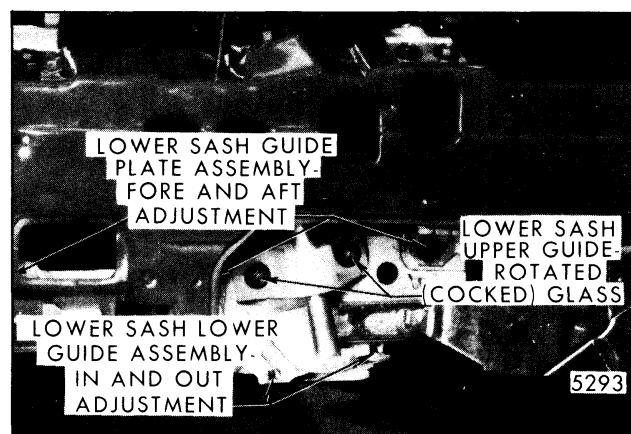


Fig. 5-92-Front Door Window Adjustment ("B, C and E" Two-Door Styles)

1. Remove upper portion of door trim assembly. (Refer to "Door Trim" portion of this section for door trim assembly removal).
2. Detach side roof rail weatherstrip at lower front corner and carefully remove from retainer over the door window, as shown in Figure 5-95.
3. Lower front door and rear quarter windows and install gauge blocks, tool J-23711-2 (black) or equivalent into side roof rail weatherstrip retainer above upper front and rear corners of the glass as shown in Figure 5-95. Then, install gauge block, tool J-23711-1 (grey), or equivalent into windshield pillar retainer slightly above beltline.

**NOTE:** The grooves on sides of the gauge blocks must be fully engaged with side roof rail weatherstrip retainer.

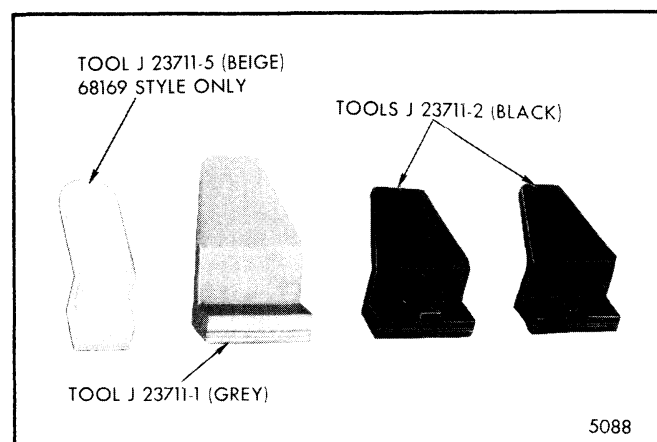


Fig. 5-93-Glass Alignment Gauge Blocks - Tool J-23394 (Consists of a Set of Four Blocks)

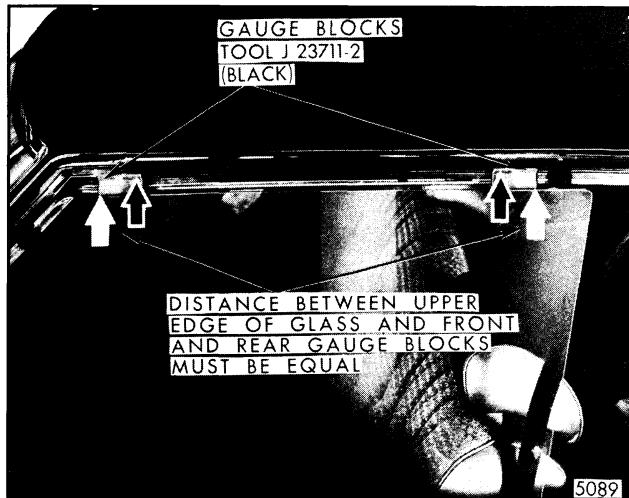


Fig. 5-94-Front Door Window Alignment (Rotated "Cocked" Glass in Body Opening Adjustment)

4. Working from inside body, with door in the closed position remove front door guide pin stabilizer attaching bolts and remove pin stabilizer ("13", Fig. 5-91). Loosen front and rear up-travel stops ("3" and "4", Fig. 5-91) belt trim support retainers ("5", Fig. 5-91) and glass bearing plate ("10", Fig. 5-91). To loosen bearing plate, remove stud nut and turn adjusting stud "10" clockwise until bearing plate is out of contact with bearing button on glass.
5. With glass in partially-down position loosen rear stationary up-travel stop on glass ("1", Fig. 5-90). Then, raise door window assembly to approximately 1" from the full-up position, as

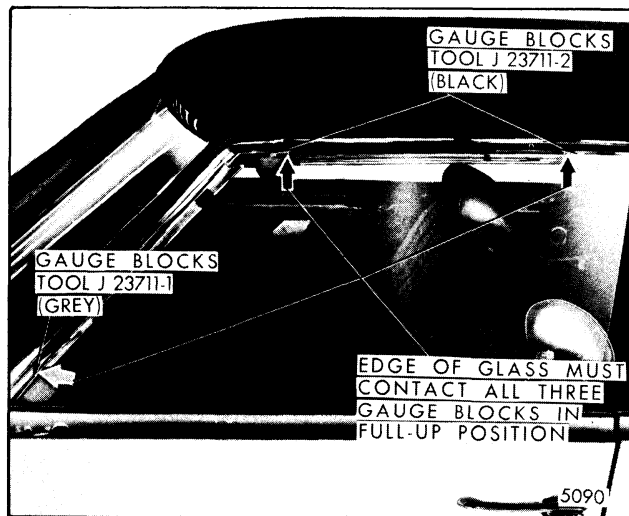


Fig. 5-95-Front Door Window Alignment (Fore and Aft Adjustment)

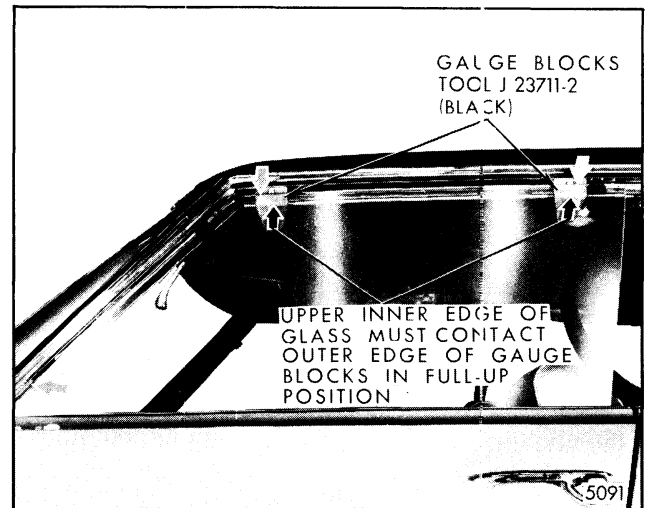


Fig. 5-96-Front Door Window Alignment (In and Out and Up-Travel Adjustment)

- illustrated in Figure 5-94. If distance (space) between the upper edge of glass and the front and rear gauge blocks is equal (as shown in Fig. 5-94), proceed with Step 6. If distance (space) between the upper edge of the glass and both upper gauge blocks is not equal, loosen lower sash upper guide attaching nuts ("7", Fig. 5-91) through access holes ("11", Fig. 5-91) and adjust glass as necessary.
6. Raise front door window assembly until contact is established between the upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks simultaneously (as shown in Fig. 5-95), proceed with Step 7. If upper and forward edge of glass does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment on lower sash guide plate ("6", Fig. 5-91) through access holes ("12", Fig. 5-91) and move glass forward or rearward until the edge of glass contacts all three gauge blocks in the full-up position.

7. Completely loosen lower sash lower guide assembly ("8", Fig. 5-91). Apply firm outboard pressure against upper end of front guide to remove slack in system and to hold upper inner edge of glass inboard against the outer edge of the gauge blocks, as shown in Figure 5-102. Then, tighten lower sash lower guide assembly attaching bolts.

**NOTE:** Inner surface of glass must contact outer surface of two upper blocks during this adjustment.



8. With glass in full-up position against upper gauge blocks, tighten up-travel stops ("3" and "4", Fig. 5-91) and adjust belt trim support retainers ("5", Fig. 5-91) outboard for a light tension against glass. Then turn glass bearing plate adjusting stud counterclockwise until the plate assembly contacts the bearing button or glass. Reinstall front door guide pin stabilizer through stabilizer guide support. Adjust pin inboard to gain firm contact with guide support, then reinstall and tighten attaching bolts.
9. Lower window and remove gauge blocks from weatherstrip retainer. Then, tighten rear stationary up-travel stop on glass ("1", Fig. 5-90) and reinstall and seal weatherstrip as previously described.
10. After all adjustments have been performed, torque all previously loosened hardware attaching nuts to 72 inch pounds, and attaching bolts to 60 to 90 inch pounds.
11. Install previously removed trim and water deflector.

### Removal and Installation

1. Remove upper portion of door trim assembly.
2. Remove front and rear up-travel stops ("3" and "4", Fig. 5-91), belt trim support retainers ("5", Fig. 5-91) and window guide pin stabilizer ("13", Fig. 5-91).
3. Remove glass bearing plate adjusting stud nut ("10", Fig. 5-91) and turn adjusting stud clockwise until bearing plate is out of contact with bearing button on glass.
4. Remove lower sash guide plate assembly to glass attaching nuts ("6", Fig. 5-91). Tilt upper edge of glass inboard to disengage glass from guide plate, then remove the window from the door by lifting straight-up.
5. To install, reverse removal procedure. Adjust window for proper alignment and operation as described in the previous adjustment procedure. Torque hardware attaching bolts to 60 to 90 inch pounds and attaching nuts to 72 inch pounds.

## FRONT DOOR WINDOW ASSEMBLY - "B and C-39 and 49" and "C-69" Styles

### Description

The front door window assembly consists of a solid tempered safety plate glass window and an individually bolted-on roller at the rear, a roller assembly (bell-crank) at the front and a stabilizer guide support at the center. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-97 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

**NOTE:** When installing glass attachments, torque nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace glass spacers and washers ("3" and "5", Fig. 5-97).

### Diagnosis and Adjustment

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("1" and "2", Fig. 5-98) and inner panel cam bolts ("8", Fig. 5-98) and raising or lowering front edge of glass in relation to rear

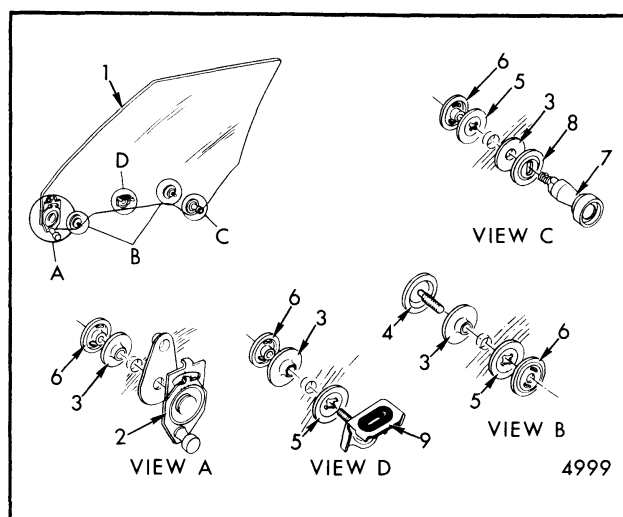


Fig. 5-97-Front Door Window Assembly - "B and C-39, 49" and "C-69" Styles

- |                                 |                                 |
|---------------------------------|---------------------------------|
| 1. Window Assembly              | 6. Nut                          |
| 2. Window Assembly (Bell Crank) | 7. Window Roller                |
| 3. Spacer                       | 8. Washer (Metal)               |
| 4. Bolt, Inner Panel Cam        | 9. Guide Pin Stabilizer Support |
| 5. Washer (Plastic)             |                                 |

edge of glass, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, torque inner panel cam attaching bolts to 60 to 90 inch pounds and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Torque up-travel stop bolts to 60 to 90 inch pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of window in or out in relation to side roof rail weatherstrip, loosen upper ends of front and rear guides ("6" and "7", Fig. 5-98) and belt trim support retainers ("3", Fig. 5-98) and loosen and remove guide pin stabilizer ("10", Fig. 5-98). Position guide inboard or outboard as required. Outboard adjustment of the guide assembly moves the upper edge of the glass inboard. Conversely, inboard adjustment moves the upper edge of the glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and tighten attaching bolts. Reinstall guide pin stabilizer inboard to gain firm contact with guide support. Torque all previously loosened hardware attachments to 60 to 90 inch pounds.

3. **WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear up-travel stops ("1" and "2", Fig. 5-98) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop bolts to 60 to 90 inch pounds.

4. **WINDOW TOO HIGH OR LOW WHEN IN A DOWN POSITION IN RELATION TO THE BELTLINE** - To adjust window down-travel, loosen window down-travel bumper support ("9", Fig. 5-98) and lower or raise window to desired full-down glass height. Then, position bumper support against lower edge of glass and torque attaching bolts to 60 to 90 inch pounds.

5. **WINDOW TOO FAR FORWARD OR REARWARD IN RELATION TO PILLAR WEATHERSTRIP OR ADJACENT BODY GLASS** - To adjust window forward or rearward, loosen upper end of rear guide ("5", Fig. 5-98) and reposition glass as necessary. Upper attaching locations in the inner panel are slotted to permit fore and aft adjustment of the guide. Because the roller assembly (bell crank) which attaches to the glass at the front pivots, the front guide does not have to be adjusted during fore and aft window alignment. Torque rear guide upper attachments to 60 to 90 inch pounds.

6. **WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depends a great extent on adjustment of belt trim support retainers at beltline ("3", Fig. 5-98) and guide pin stabilizer ("10", Fig. 5-98). The trim support retainers "3" should contact glass throughout full cycle of window. However, in some cases due to slight variations in glass contour, the strip may lose contact with glass halfway through the cycle. This is permissible provided it does not result in loose glass or restrict ease of window operation. Adjust the guide pin stabilizer inboard into contact with the guide support and tighten attaching bolts. Torque all previously loosened attachment components to 60 to 90 inch pounds.

## GLASS ALIGNMENT GAUGE BLOCKS

("B and C" Four-Door Hardtop Ventless Styles)

To facilitate adjustment of this glass, and to maintain consistent glass alignment within specifications, use glass alignment gauge blocks tool J-23711 or equivalent.

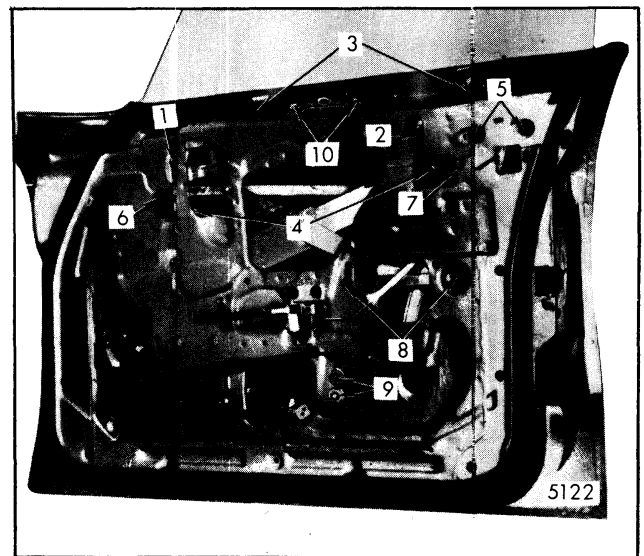


Fig. 5-98-Window Removal and Adjustment: - "B and C-39, 49" and "C-69" Styles

- |  |  |
|--|--|
| 1. Window Front Up-Travel Stop Bolt                | 6. Front Guide Upper Bolt                  |
| 2. Window Rear Up-Travel Stop Bolt                 | 7. Rear Guide to Guide Upper Bracket Bolt  |
| 3. Window Belt Trim Support Retainer Bolts         | 8. Inner Panel Cam Bolts                   |
| 4. Window Lower Sash Channel Cam Nuts Access Holes | 9. Window Down-Travel Support Bracket Bolt |
| 5. Rear Guide Upper Bracket Bolts                  | 10. Window Guide Pin Stabilizer            |

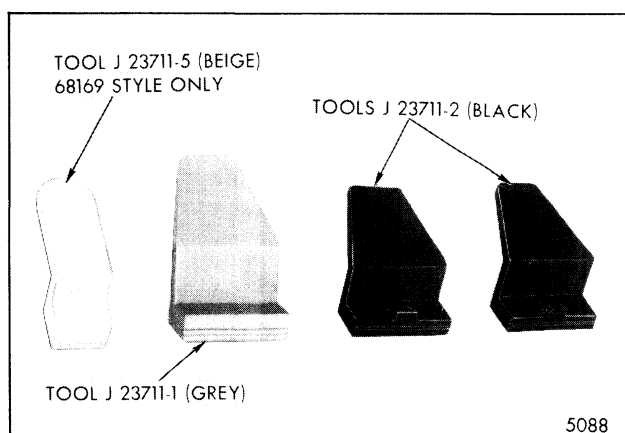


Fig. 5-99-Glass Alignment Gauge Blocks - Tool J-23711 or Equivalent for "B and C" Styles (Consists Of A Set Of Four Blocks)

lent (Fig. 5-99). For proper use of gauge blocks, refer to the following procedure:

1. Remove upper and lower portion of door trim assembly and peel back water deflector sufficiently to gain access to the inner panel cam. (Refer to the "Door Trim" portion of this section for door trim assembly removal).
2. Detach side roof rail weatherstrip at lower front corner and carefully remove from retainer over door window, as shown in Figure 5-101.
3. Lower front and rear door windows and install gauge blocks, tool J-23711-2 (black) or equivalent into side roof rail weatherstrip retainer above and in from upper front and rear corners of glass as shown in Figure 5089. Then, install gauge block, tool J- 23711-1 (grey), or equivalent into the windshield pillar retainer slightly

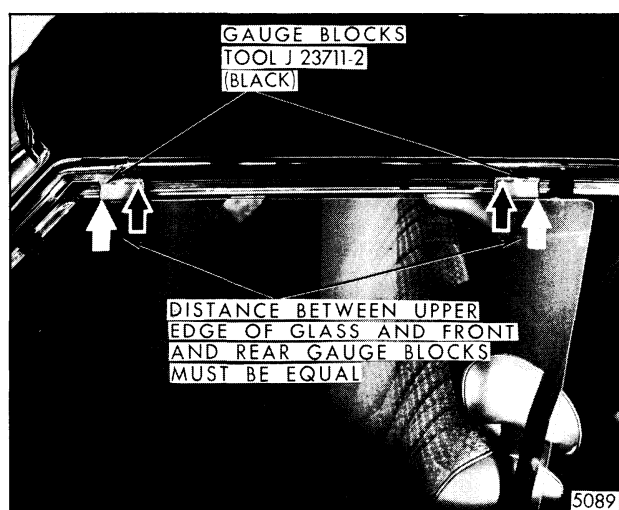


Fig. 5-100-Front Door Window Alignment (Rotated "Cocked" Glass in Body Opening Adjustment)

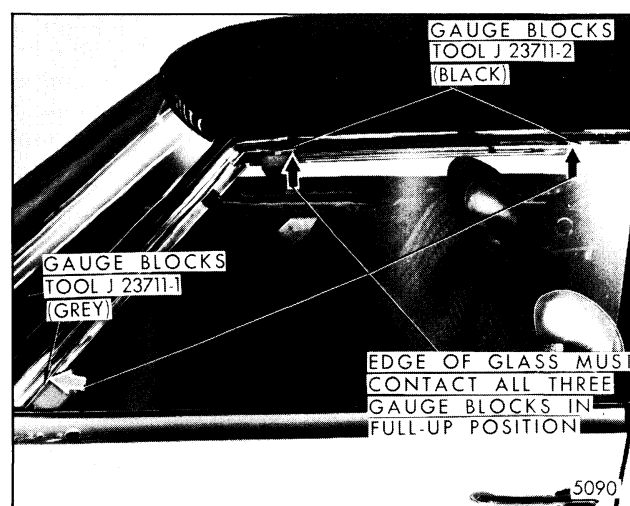


Fig. 5-101-Front Door Window Alignment (Fore and Aft Adjustment)

above beltline. Grooves on sides of gauge blocks must be fully engaged with side roof rail weatherstrip.

**NOTE:** On 6CB69 styles because glass must be adjusted within a "fixed" opening, install glass suction cups on interior surface of glass (as similarly used in Fig. 5-106 for "F" styles), to enable adjuster to shift glass when making adjustments with door in a closed position.

4. Working from inside body, with door in the closed position, remove front door guide pin stabilizer attaching bolts and remove pin stabilizer ("10", Fig. 5-98). Loosen front and rear up-travel stops ("1" and "2", Fig. 5-98) and belt trim support retainers ("3", Fig. 5-98).

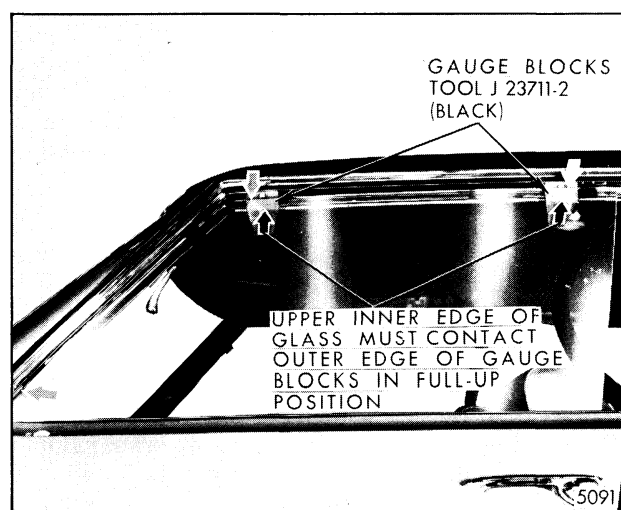


Fig. 5-102-Front Door Window Alignment (In and Out and Up-Travel Adjustment)

5. Raise front door window assembly to approximately 1" from full-up position, as illustrated in Figure 5-100. If distance (space) between upper edge of glass and front and rear gauge blocks is equal (as shown in Fig. 5-100), proceed with Step 6. If distance (space) between upper edge of glass and both upper gauge blocks is not equal, loosen inner panel cam attaching bolts ("8", Fig. 5-98) and adjust glass as necessary.
6. Raise front door window assembly until contact is established between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-101), proceed with Step 7. If upper and forward edge of glass does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment on rear guide ("5", Fig. 5-98) and move glass forward or rearward until the edge of glass contacts all three gauge blocks in full-up position.

7. Completely loosen upper ends of front and rear guides. Apply firm outboard pressure against upper end of the front guide to remove slack in the system and to hold upper inner edge of glass inboard against outer edge of gauge blocks, as shown in Figure 5-102. Then, tighten, upper guide attaching bolts. Repeat operation with rear guide. Guides will now be coordinated to the plane of the glass.

**NOTE:** Inner surface of glass must contact outer surface of both upper blocks during this adjustment.

8. With glass in full-up position against upper gauge blocks, tighten up-travel stops ("1" and "2", Fig. 5-98) and adjust belt trim support retainers ("3", Fig. 5-98) outboard until they lightly contact door glass, then tighten. Reinstall front door guide pin stabilizer pin inboard to gain firm contact with guide support then reinstall and tighten attaching bolts.
9. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip as previously described.
10. After all adjustments have been made, torque all previously loosened hardware attaching nuts to 72 inch pounds and attaching bolts to 60 to 90 inch pounds.
11. Install previously removed trim and water deflector.

## Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Remove front and rear window up-travel stops ("1" and "2", Fig. 5-98) and guide pin stabilizer ("10", Fig. 5-98).
3. Loosen front and rear belt trim support retainers ("3", Fig. 5-98).
4. With window in three-quarter-down position, remove lower sash channel cam to glass attaching nuts ("4", Fig. 5-98). Remove window by lifting straight up and aligning rollers with notches provided in the door inner panel. Remove rear end of window first, then front end.
5. To install, reverse removal procedure. Adjust window for proper alignment and operation as described in the previous adjustment procedure. Torque all previously removed attaching nuts to 72 inch pounds and all attaching bolts to 60 to 90 inch pounds.

## DOOR WINDOW ASSEMBLY - "F" Styles

### Description

The door window assembly consists of a solid tempered safety plate glass window and an individually bolted-on roller at the rear and a roller assembly (bell-crank) at the front. The lower sash channel cam is bolted to the glass, but is removed in the process of removing the window.

Figure 5-103 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

**NOTE:** When installing glass attachments, torque attaching nuts to 72 inch pounds (6 foot pounds). Also, when replacing door glass, replace door glass washers and spacers ("3" and "8", Fig. 5-103).

### Diagnosis and Adjustment

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("1" and "2", Fig. 5-104) and inner panel cam bolts ("8", Fig. 5-104) and raising or lowering front edge of glass in relation to rear edge of glass as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, tighten inner panel cam attaching bolts and raise

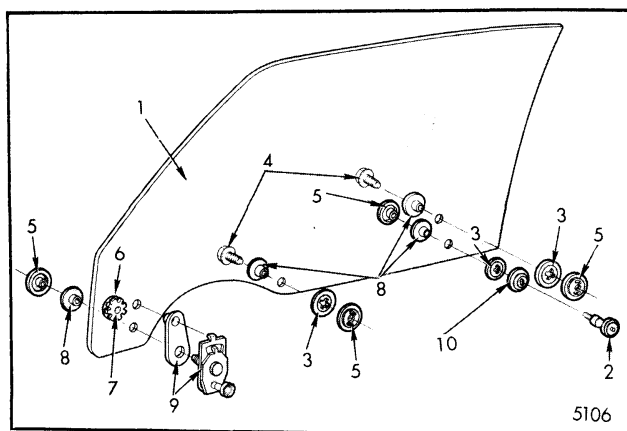


Fig. 5-103-Door Window Assembly

- |                           |                                 |
|---------------------------|---------------------------------|
| 1. Window Assembly        | 7. Glass Bearing                |
| 2. Window Roller          | Fastener Cap                    |
| 3. Washer (Plastic)       | 8. Spacers                      |
| 4. Bolt Inner Panel Cam   | 9. Roller Assembly (Bell Crank) |
| 5. Nut                    | 10. Washer (Metal)              |
| 6. Glass Bearing Fastener |                                 |

glass to desired height to establish proper contact with side roof rail weatherstrip. Tighten up-travel stop bolts. Torque attaching bolts to 60 to 90 inch pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of window in or out in relation to side roof rail weatherstrip, loosen upper ends of front and rear guides ("5" and "6", Fig. 5-104) and glass belt trim support retainers ("3", Fig. 5-104) and position guide inboard or outboard as required. Outboard adjustment of the guide assembly moves the upper edge of the glass inboard. Conversely, inboard adjustment moves the upper edge of the glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and tighten attaching bolts. Torque all previously loosened hardware attachment components to 60 to 90 inch pounds.
3. **WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear up-travel stops ("1" and "2", Fig. 5-104) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Torque up-travel stop bolts to 60 to 90 inch pounds.

4. **WINDOW TOO HIGH OR LOW WHEN IN A DOWN POSITION IN RELATION TO THE BELTLINE** - To adjust window down-travel, loosen window down-travel bumper support ("9", Fig. 5-104) and lower or raise window to desired full-down glass height. Then, position bumper support against lower edge of glass and torque attaching bolt to 60 to 90 inch pounds.
5. **WINDOW TOO FAR FORWARD OR REARWARD IN RELATION TO PILLAR WEATHERSTRIP OR ADJACENT BODY GLASS** - To adjust window forward or rearward, loosen upper end of rear guide ("7", Fig. 5-104) and re-position glass as necessary. Upper attaching locations in the inner panel are slotted to permit fore and aft adjustment of the guide. Because the roller assembly (bell crank) which attaches to the glass at the front pivots, the front guide does not have to be adjusted during fore and aft window alignment. Torque guide attachments to 60 to 90 inch pounds.
6. **WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depends a great extent on the adjustment of the window belt trim support retainers at the belt-line ("3", Fig. 5-104). The support retainers should contact the glass throughout the full cycle of the window. However, in some cases due

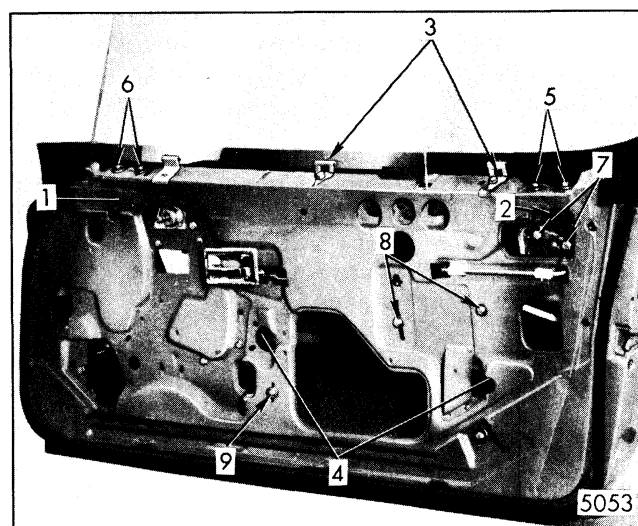


Fig. 5-104-Window Removal and Adjustment - "F" Styles

- |  |  |
|--|--|
| 1. Window Front Up-Travel Stop Bolt                | 5. Rear Guide Upper Bracket Bolts          |
| 2. Window Rear Up-Travel Stop Bolt                 | 6. Front Guide Upper Bolts                 |
| 3. Belt Trim Support Retainer Bolts                | 7. Rear Guide to Guide Upper Bracket Bolts |
| 4. Window Lower Sash Channel Cam Nuts Access Holes | 8. Inner Panel Cam Bolts                   |
|  | 9. Window Down Travel Bumper Support       |

to the slight variations in glass contour, the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass or restrict ease of window operation. After the belt trim support retainers have been adjusted, torque the attaching bolts to 60 to 90 inch pounds.

## GLASS ALIGNMENT GAUGE BLOCKS - "F" Styles

To consistently align door glass within specifications and to facilitate adjustment of this glass, use glass alignment gauge block tool J-23394 (or equivalent) (Fig. 5-105). For proper use of gauge blocks, refer to the following procedure.

1. Remove door trim assembly and inner panel water deflector as described in "Door Trim" and "Front and Rear Doors" portion of this section.
2. Detach side roof rail weatherstrip at lower front and rear corners and carefully remove from retainer.
3. With glass in a partially down position, install gauge blocks, tool J-23394-2 (blue) or equivalent, into side roof rail weatherstrip retainer above upper front and rear corners of the glass as shown in Figure 5-106. Then, install glass suction cups on interior surface of glass (Fig. 5-106) to enable adjuster to shift glass when making adjustments with door in a closed position.

**NOTE:** When installing gauge blocks (blue) or equivalent into upper retainer on "F" styles, handle portion of blocks must protrude outboard (Fig. 5-106). Also, grooves on sides of blocks must be fully engaged with side roof rail weatherstrip retainer.

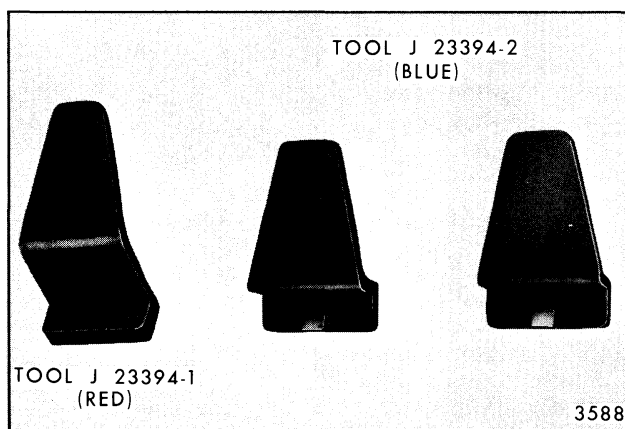


Fig. 5-105-Glass Alignment Gauge Blocks - Tool J-23394 or Equivalent (Consists of a Set of Three Blocks)

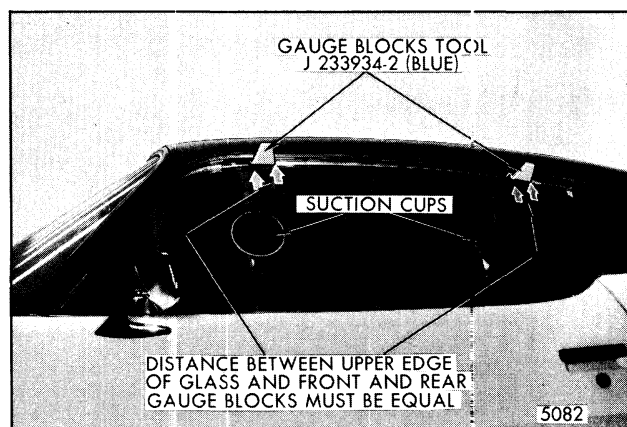


Fig. 5-106-"F" Style Door Window Alignment (Rotated "Cocked" Glass in Body Opening Adjustment)

4. Working from inside body, with door in a closed position, loosen front and rear up-travel stops ("1" and "2", Fig. 5-104) and belt trim support retainers ("3", Fig. 5-104).
5. Raise door window to approximately 1" from full-up position as illustrated in Figure 5-106. If distance (space) between upper edge of glass and front and rear gauge blocks is equal (as shown in Fig. 5-106), proceed with Step 6. If distance (space) between upper edge of glass and both upper gauge blocks is not equal loosen inner pannel cam attaching bolts ("8", Fig. 5-104) and adjust as necessary.
6. Lower glass and install gauge block, tool J-23394-1 (red), or equivalent into the windshield pillar retainer slightly above the beltline (Fig. 5-107).

**NOTE:** When installing gauge block (red) or equivalent into windshield pillar retainer, handle portion of block must protrude inboard. Also

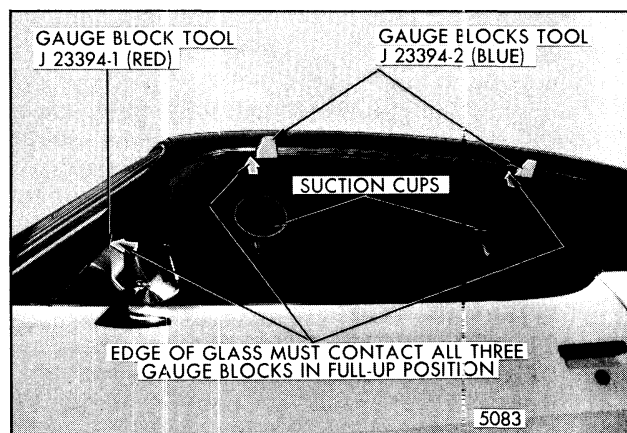


Fig. 5-107-"F" Style Door Window Alignment (Fore and Aft Adjustment)

grooves on side of block must be fully engaged with retainer.

Raise door window assembly until contact is established between upper and forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contacts all three gauge blocks at the same time (as shown in Fig. 5-107), proceed with Step 7. If upper and forward edge does not contact all three gauge blocks simultaneously, loosen fore and aft adjustment on rear guide ("7", Fig. 5-104) and move glass forward or rearward until edge of glass contacts all three gauge blocks in full-up position.

7. Completely loosen upper and lower ends of front and rear guides ("5" and "6", Fig. 5-104). Apply firm outboard pressure against upper end of front guide to remove slack in system and to hold upper inner edge of the glass inboard against outer edge of tab on gauge block. Then, tighten front guide upper, then lower attaching bolts. Repeat operation with rear guide. Guides will now be coordinated to plane of glass.
8. With glass in full-up position against gauge blocks, tighten up-travel stops ("1" and "2", Fig. 5-104) and adjust belt trim support retainers ("3", Fig. 5-104) outboard for light contact.
9. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip with a pumpable sealer.
10. After all adjustments have been performed, torque all previously loosened hardware attaching nuts to 72 inch pounds and bolts to 60 to 90 inch pounds.
11. Reinstall previously removed trim and water deflector.

### Removal and Installation

1. Remove door trim assembly and inner panel water deflector.
2. Remove window front and rear up-travel stops ("1" and "2", Fig. 5-104).
3. Loosen window front and rear belt trim support retainers ("3", Fig. 5-104).
4. With window in three-quarter-down position, remove lower sash channel cam to glass attaching nuts ("4", Fig. 5-104). Remove window by lifting straight up and aligning rollers with notches provided in the door inner panel.

5. To install, reverse removal procedure. Adjust window for proper alignment and operation as described in the subsequent adjustment procedure. Torque previously removed attaching nuts to 72 inch pounds and attaching bolts to 60 to 90 inch pounds.

## FRONT DOOR WINDOW MANUAL REGULATOR - "X-69" Styles With Optional Ventilator

### Removal and Installation

1. Remove front door trim assembly and inner panel water deflector.
2. Operate window to "full-up" position and secure in place with pieces of cloth-backed body tape applied over door frame.
3. On two door styles, remove inner panel cam as previously described.
4. Remove ventilator division channel lower adjusting stud and nut and window regulator attaching bolts (Fig. 5-100).

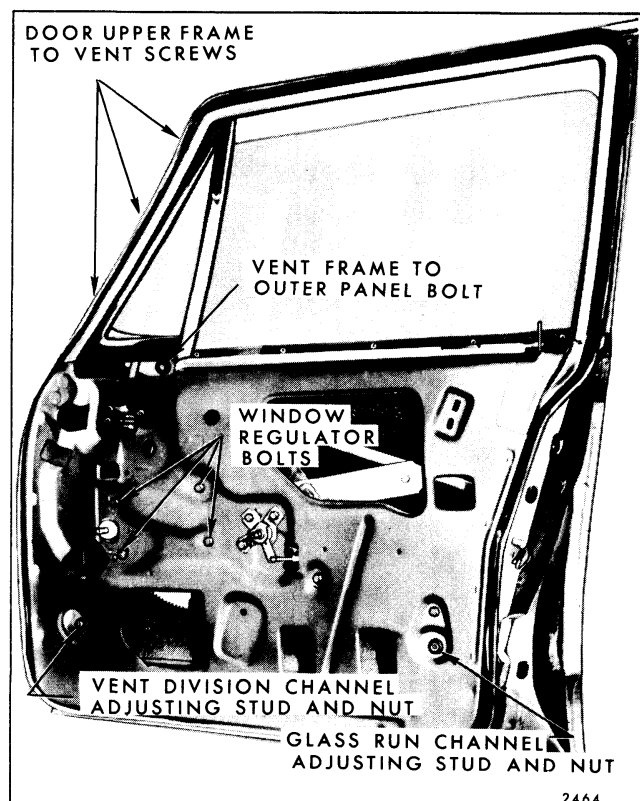


Fig. 5-108-Door Ventilator and Regulator Attachments - "X-69" Styles with Optional Ventilator

5. Press ventilator division channel outboard to permit disengagement of regulator spindle from inner panel then slide regulator balance arm roller and lift arm roller out of lower sash channel cam at front. Remove regulator through large access hole.

6. To install, reverse removal procedure.

## FRONT DOOR WINDOW MANUAL REGULATOR - "X" Styles With Ventless Glass

### Removal and Installation

1. Remove front door trim assembly and inner panel water deflector.
2. Secure window in "full-up" position with pieces of cloth-backed body tape applied over door frame.
3. Mark location and remove inner panel cam attaching bolts ("2", Fig. 5-54) and inner panel cam as previously described.
4. Remove window regulator attaching bolts and remove regulator through large access hole.
5. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

## FRONT DOOR WINDOW REGULATOR - Manual and Electric - "A-29,35" Styles

### Removal and Installation - Refer to Figure 5-40

1. Remove upper and lower door trim assembly and detach inner panel water deflector.
2. Prop window in full-up position by inserting a rubber door stop between the door inner panel and door glass at front and rear of window (Fig. 5-109).
3. Mark location and remove inner panel cam attaching bolts ("8", Fig. 5-40) and remove regulator attaching bolts ("13", Fig. 5-40).
4. On electrically operated regulators, disconnect wire harness connector at window regulator motor. Remove the regulator attaching bolts ("13", Fig. 5-40).
5. Slide front regulator upper balance arm off sash cam, then slide rear lift arm forward off sash cam.

6. Slide regulator rearward and remove through lower rear access hole.
7. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

## FRONT DOOR WINDOW REGULATOR - Manual and Electric - "A-37,57,80" Styles

### Removal and Installation - Refer to Figure 5-42

1. Remove upper and lower door trim assembly and detach inner panel water deflector.
2. Prop window in full-up position by inserting rubber wedge door stops between window and inner panel (at belt) at front and rear of window (Fig. 5-109).
3. Mark location and remove inner panel cam attaching bolts ("8", Fig. 5-42) as previously described.
4. Mark location and remove rear guide upper and lower attaching bolts ("5" and "7", Fig. 5-42) then remove rear guide.
5. On electric regulators mark location and remove down-travel stop ("12", Fig. 5-42) and front door window glass stabilizer plate "15", Fig. 5-42) then disconnect wire harness connector at window regulator motor.
6. Remove regulator attaching bolts and front lower sash channel cam to glass attaching nut ("10", Fig. 5-42).

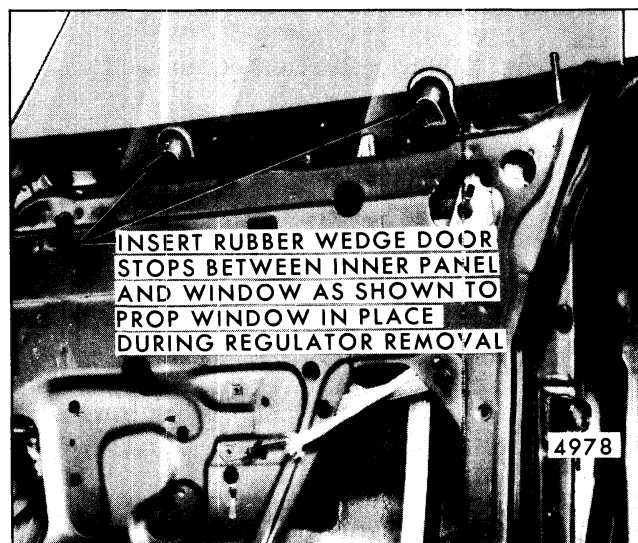


Fig. 5-109-Door Window Propped In Place For Regulator Removal



7. Slide regulator forward until front upper balance arm roller is out of sash channel cam.
8. Lift regulator to clear rear roller on glass and slide rear regulator lift arm rearward until it disengages from rear of sash channel cam.
9. Remove regulator through rear access hole.
10. To install, reverse removal procedure. Torque inner panel cam, rear guide, down stop and front door window glass stabilizer attaching plates to 60 to 90 inch pounds. Torque regulator attaching bolts and front lower sash channel cam to glass attaching nut to 72 inch pounds.

### **FRONT DOOR WINDOW REGULATOR - Manual and Electric - "B, C and E" Two-Door Hardtop and Convertible Styles**

#### **Removal and Installation - Refer to Figure 5-46**

1. Remove upper and lower portion of door trim assembly and detach inner panel water deflector.
2. Remove inside locking rod as previously described.
3. Lower window to half-down position and remove regulator attaching bolts ("4", Fig. 5-46). Disengage regulator lift arm roller from lower sash channel cam and prop window in full-up position using two rubber door wedge stops between inner panel at belt and door window as shown in Figure 5-109. On manual styles, remove regulator assembly through large access hole. On electric styles, rotate regulator assembly clockwise so that motor portion of regulator assembly comes out access hole first.
4. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

### **FRONT DOOR WINDOW REGULATOR - Manual - All "B and C" Four-Door Styles**

#### **Removal and Installation - Refer to Figure 5-48**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Lower window and remove lower sash channel cam attaching stud nuts, except on "B" closed styles. On "B" closed styles, the regulator lift and balance arms can be disengaged from lower sash channel cam without removal of cam from glass.

**NOTE:** On "B" closed styles, raise window to full-up position and prop in place with two rubber wedge door stops between inner panel (at belt) and door window as shown in Figure 5-109.

3. Mark location and remove inner panel cam attaching bolts.
4. Remove window regulator attaching bolts, then remove regulator through large access hole.
5. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

### **FRONT DOOR WINDOW REGULATOR - Electric - All "B and C" Four-Door Styles**

#### **Removal and Installation - Refer to Figure 5-48**

1. Remove upper and lower portion of door trim assembly and detach inner panel water deflector.
2. Remove door window and inner panel cam as previously described.
3. Disconnect wire harness connector at regulator motor.
4. Remove window regulator attaching bolts ("8", Fig. 5-48), remove regulator through large access hole.
5. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

### **DOOR WINDOW REGULATOR (MANUAL AND ELECTRIC) - "F" Styles**

#### **Removal and Installation - Refer to Figure 5-50**

1. Remove door trim assembly and detach inner panel water deflector.
2. Mark location and remove door window and inner panel cam as previously described.
3. On electric styles, disconnect wire harness connector at regulator motor.
4. Remove window regulator attaching bolts ("10", Fig. 5-50), remove regulator through large access hole.
5. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

## **FRONT DOOR WINDOW REAR GUIDE - All "A" Body Styles**

### **Removal and Installation**

1. Remove front door upper and lower trim assembly and inner panel water deflector.
2. With window in full-up position, mark location of rear guide upper attaching bolts ("5" and "7", Fig. 5-40) and rear up-travel stop (on rear guide) attaching bolt ("3", Fig. 5-40). Remove stop from rear guide.
3. Remove rear guide upper attaching bracket to door inner panel attaching bolts ("5", Fig. 5-40).
4. Remove rear guide lower attaching bolt ("7", Fig. 5-40).
5. Slide lower end of guide forward and disengage from roller. Remove upper end of guide through access hole.
6. To install reverse removal procedure. Torque upper and lower guide and rear up-travel stop attaching bolts to 60 to 90 inch pounds.
7. For adjustment, refer to front door window adjustments.

## **FRONT DOOR WINDOW GUIDE TUBE - "B, C and E" Two-Door Hardtop and Convertible Styles**

### **Removal and Installation**

1. Remove door trim assembly (upper and lower portion) and inner panel water deflector as previously described.
2. Prop window in half-raised position with rubber door stop wedges as shown in Figure 5-109.
3. Mark location of lower sash upper and lower guide attachments ("2" and "5", Fig. 5-46) and remove attachments.
4. Remove guide tube upper and lower attachments ("1", Fig. 5-46) lower guide tube into door and remove through access hole, upper end first.
5. To install, reverse removal procedure. Install upper and lower sash guides to premarked position to insure proper glass alignment. Torque previously removed attaching nuts to 72 inch pounds and attaching bolts to 60 to 90 inch pounds.

## **FRONT DOOR WINDOW FRONT GUIDE - "B and C" Four-Door Hardtop Styles**

### **Removal and Installation - Refer to Figure 5-48**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. With window in a full-up position, remove front guide upper and lower attaching bolts.
3. Pull guide downward and rearward to disengage from window front roller. Remove guide through large access hole.
4. To install, reverse removal procedure. Torque attaching bolts to 60 to 90 inch pounds.
5. For adjustment, refer to door window adjustments.

## **FRONT DOOR WINDOW REAR GUIDE - "B and C" Four-Door Hardtop Styles**

### **Removal and Installation - Refer to Figure 5-48**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. With window in a full-up position, remove rear guide upper and lower attaching bolts ("2" and "4", Fig. 5-48).
3. Pull guide down and forward to disengage from window rear roller. Remove guide through large access hole.
4. To install, reverse removal procedure. Torque upper and lower attaching bolts to 60 to 90 inch pounds.
5. For adjustment, refer to door window adjustments.

## **FRONT DOOR WINDOW REAR GUIDE - "B" Closed Styles**

### **Removal and Installation**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. With window in full-up position, remove rear guide upper and lower attaching bolts ("2" and "3", Fig. 5-44).

3. Pull guide down and forward to disengage from window roller and remove from door through large access hole.
4. To install, reverse removal procedure. Torque attaching bolts to 60 to 90 inch pounds.
5. For adjustment, refer to door window adjustments.

### **FRONT DOOR WINDOW UPPER AND LOWER SASH GUIDE ASSEMBLY - "B, C and E" Two-Door Hardtop and Convertible Styles**

#### **Removal and Installation**

1. Remove upper and lower portion of door trim assembly and detach water deflector.
2. Remove lower sash upper or lower guide assembly attaching bolts ("5" and "2", Fig. 5-46). Then, remove guide tube assembly as previously described.
3. To install, reverse removal procedure. Torque attaching nuts to 72 inch pounds, and attaching bolts to 60 to 90 inch pounds.
4. For adjustment, refer to door window adjustments.

### **DOOR WINDOW FRONT GUIDE - "F" Styles**

#### **Removal and Installation - Refer to Figure 5-50**

1. Remove front door trim assembly and inner panel water deflector.
2. With window in full-up position, remove front up-stop from guide.
3. Remove front guide upper and lower attaching bolts.
4. Pull guide down and rearward to disengage from window front roller. Remove guide through large access hole.
5. To install, reverse removal procedure. Torque attaching bolts to 60 to 90 inch pounds.
6. For adjustment, refer to door window adjustments.

### **DOOR WINDOW REAR GUIDE - "F" Styles**

#### **Removal and Installation - Refer to Figure 5-50**

1. Remove door trim assembly and inner panel water deflector.
2. Remove rear guide upper and lower attaching bolts.
3. Pull guide down and forward to disengage from window rear roller. Remove guide through large access hole.
4. To install, reverse removal procedure. Torque attaching bolts to 60 to 90 inch pounds.
5. For adjustment, refer to door window adjustments.

### **FRONT DOOR WINDOW GLASS RUN CHANNEL - "B and X" Closed Styles**

#### **Removal and Installation**

1. On "X" styles, remove front door window as previously described. On "B" styles, lower glass to a full-down position.
2. Starting at the upper front corner of the door upper frame, press (finger pressure) sides of run channel together and pull channel from frame.
3. To install, reverse removal procedure.

### **DOOR WEDGE PLATES - "B and E-67" Styles**

#### **Description and Installation**

Door wedge plates are used on convertible styles to give additional support to the door when it is in the closed position. One plate is installed to the body lock pillar and the other to the door lock pillar (Fig. 5-110). The plates should contact each other to the extent of a 1/32" interference when the door is closed. Body side wedge plate shims are available as a service part so that this interference can be obtained.

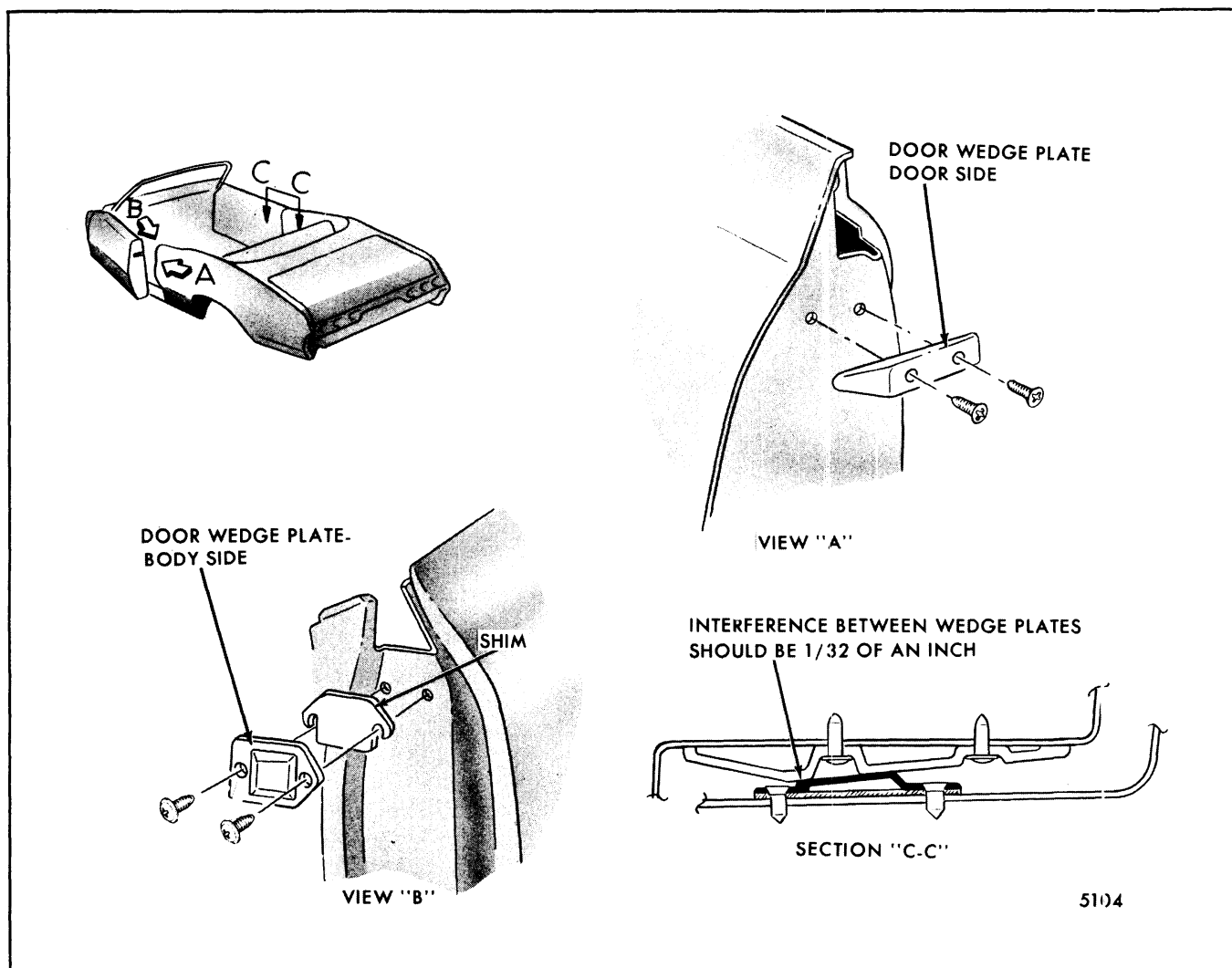


Fig. 5-110-Door Wedge Plates "67" Styles

## REAR DOORS

### DESCRIPTION

Information in this section concerns operations applicable to rear doors only. Procedures for removal of water deflectors, door handles, weatherstrips and door trim are outlined in the "Front and Rear Doors" and "Door Trim" portions of this section - see index.

Illustrations 5-111 through 5-120 are typical of rear doors with the trim assembly and inner panel water deflector removed. These figures identify the component parts of the rear door assembly (by style), their relationship and various attaching points.

### REAR DOOR HINGES - All Styles

#### Description

All rear door hinges are constructed of steel or a combination of steel and malleable iron. A two stage hold-open feature is incorporated in all lower hinges, except on standard "X" styles which do not have a hold-open feature and "A-29,35" styles which incorporate the hold-open in the upper hinge.

#### Adjustments

In-or-out and up-or-down adjustment is available at the door side hinge attaching screws. Fore-or-aft and

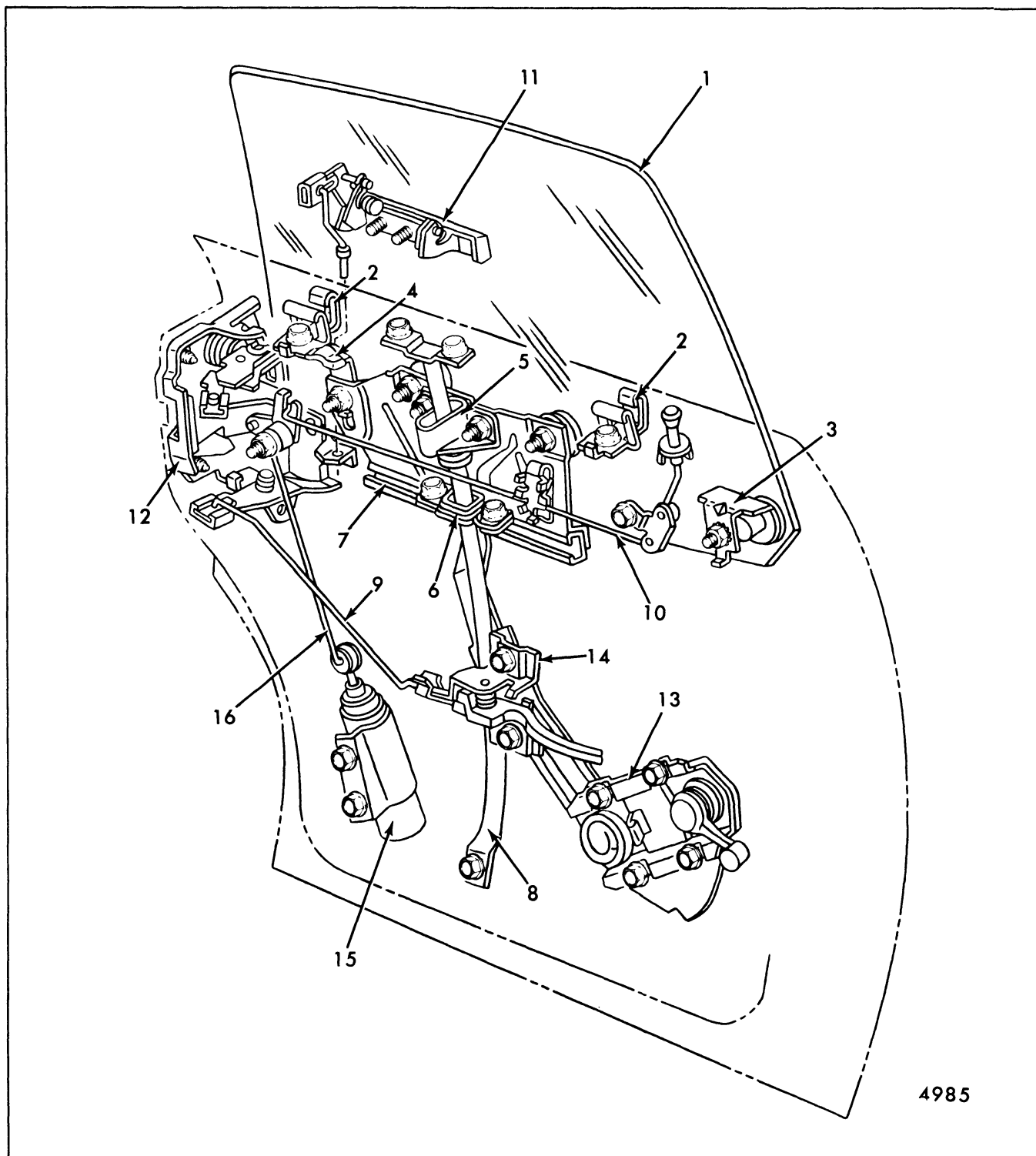


Fig. 5-111-Rear Door Hardware - "A-29,35" Styles

- |                                |  |                                  |                                     |
|--------------------------------|--|----------------------------------|-------------------------------------|
| 1. Window Assembly             | 6. Lower Sash Lower Guide                | 10. Inside Locking Rod           | 14. Door Lock Remote Control Handle |
| 2. Belt Trim Support Retainers | 7. Lower Sash Guide Plate Assembly       | 11. Door Outside Lift Bar Handle | 15. Door Lock Solenoid              |
| 3. Front Up-Travel Stop        | 8. Guide Tube Assembly                   | 12. Door Lock                    | 16. Rod-Inside Locking to Solenoid  |
| 4. Rear Up-Travel Stop         | 9. Remote Control To Lock Connecting Rod | 13. Window Regulator (Electric)  |                                     |
| 5. Lower Sash Upper Guide      |  |                                  |                                     |

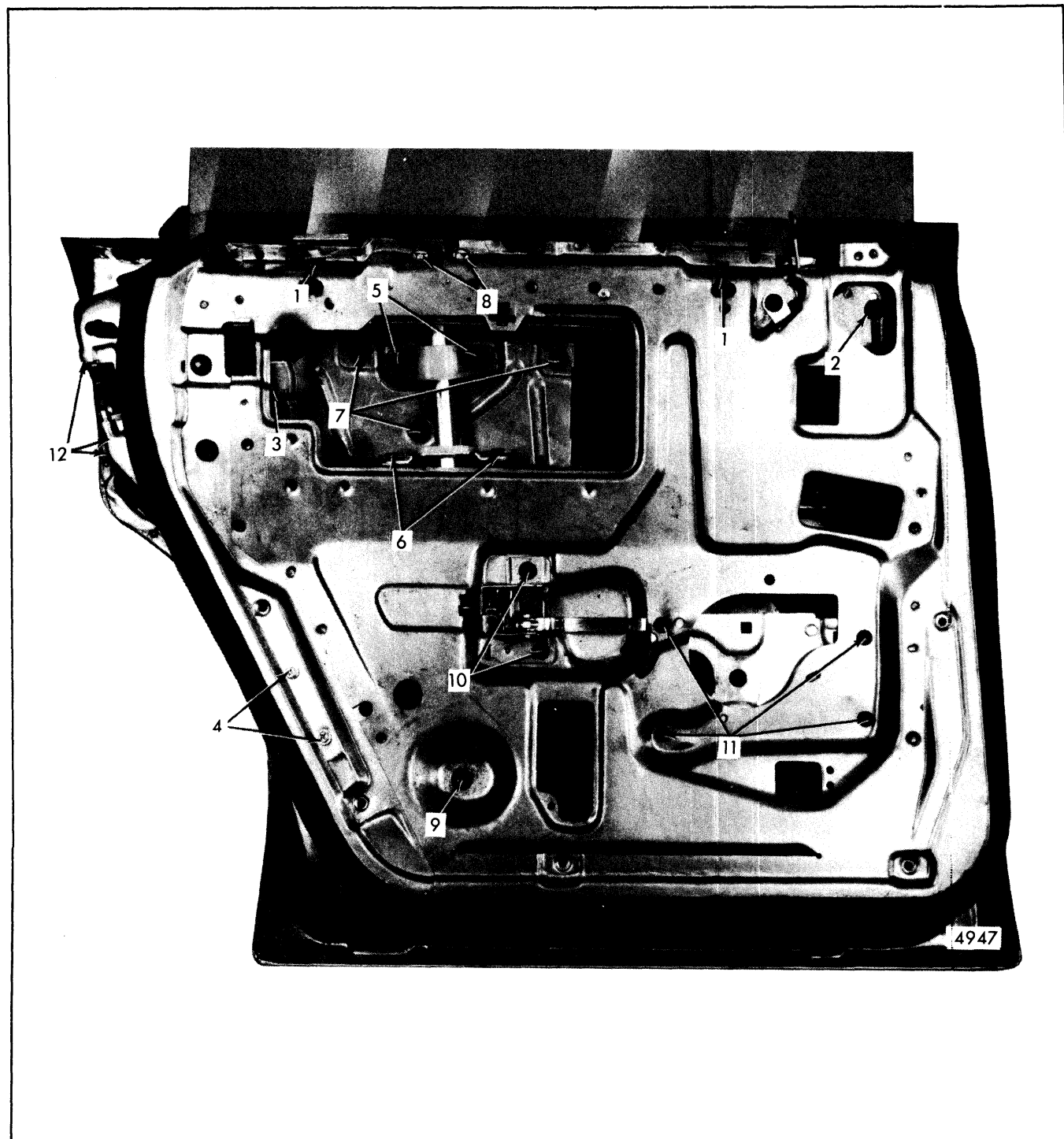
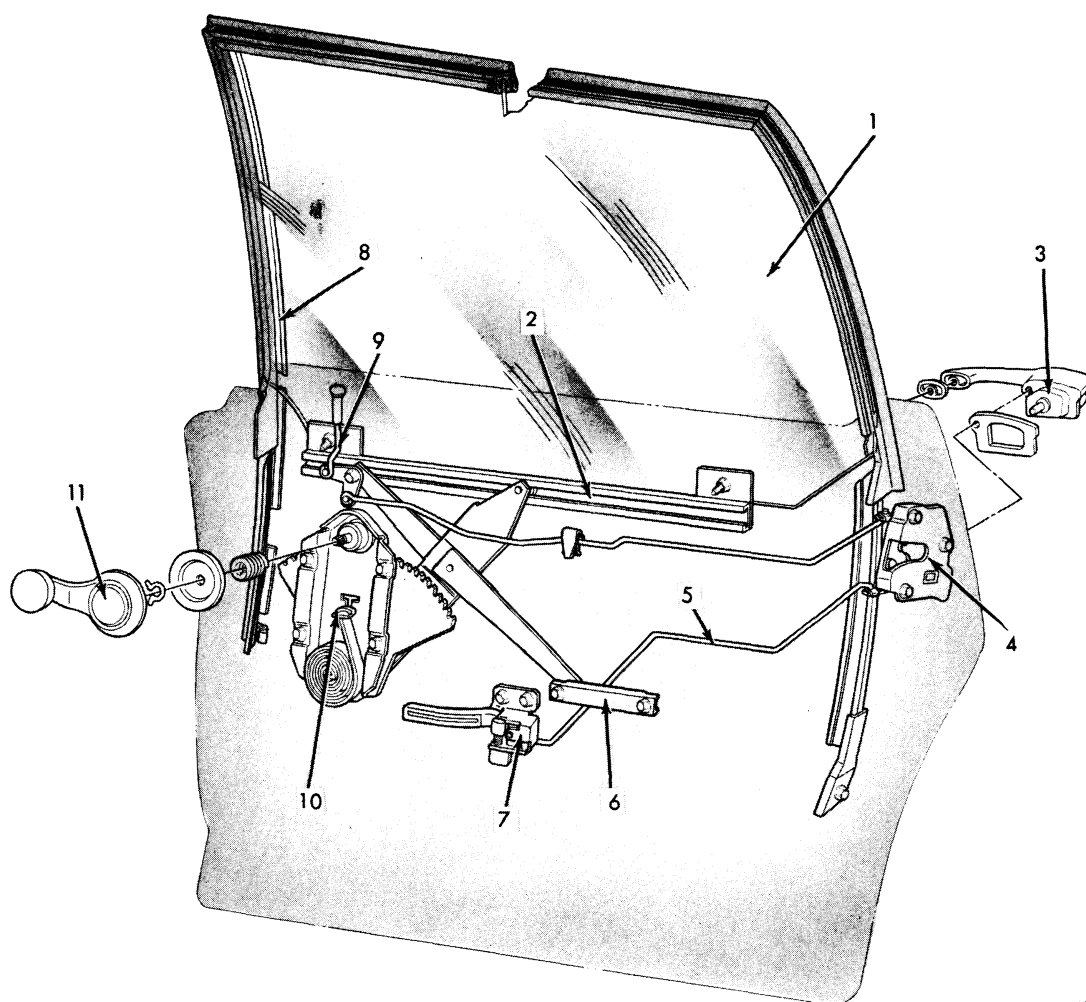


Fig. 5-112-Rear Door Hardware Attachments - "A-29,35" Styles

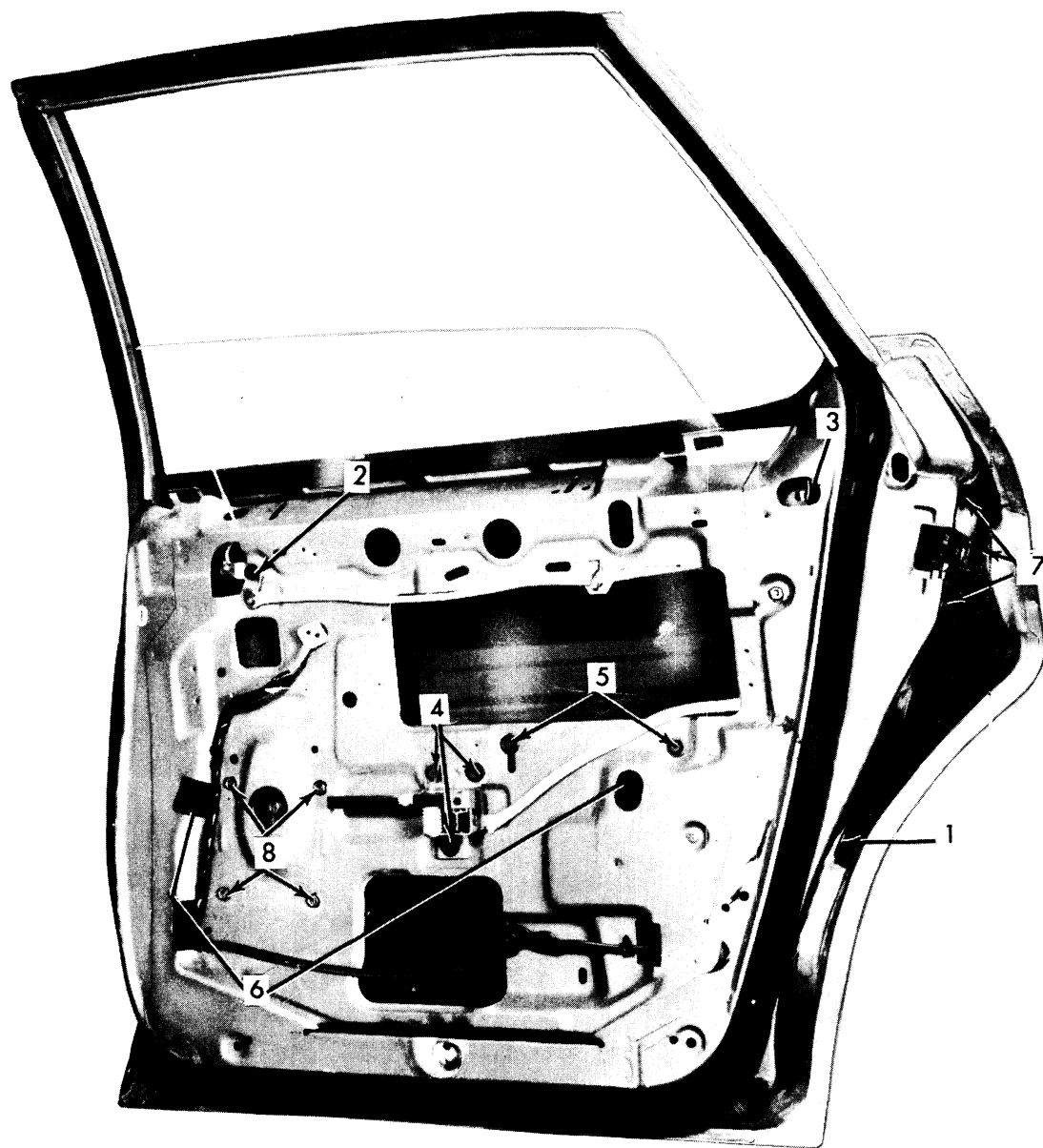
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|--|---|--|---|
| 1. Belt Trim Support Retainer Attaching Screws | 4. Door Lock Solenoid Attaching Screws    | 7. Lower Sash Guide Plate Assembly Attaching Nuts    | 10. Door Lock Remote Control Attaching Screws |
| 2. Front Up-Travel Stop Attaching Screw        | 5. Lower Sash Upper Guide Attaching Nut   | 8. Window Guide Tube Assembly Upper Attaching Screws | 11. Window Regulator Attaching Screws         |
| 3. Rear Up-Travel Stop Attaching Screw         | 6. Lower Sash Lower Guide Attaching Screw | 9. Window Guide Tube Assembly Lower Attaching Screw  | 12. Door Lock Attaching Screws                |



4137

Fig. 5-113-Rear Door Hardware - "B" Closed Styles

- |                           |                                       |                       |                             |
|---------------------------|---------------------------------------|-----------------------|-----------------------------|
| 1. Window Assembly        | 3. Outside Handle and Sealing Gaskets | 6. Inner Panel Cam    | 10. Window Regulator        |
| 2. Lower Sash Channel Cam | 4. Door Lock                          | 7. Remote Control     | 11. Window Regulator Handle |
|                           | 5. Remote Control Connecting Rod      | 8. Glass Run Channel  |                             |
|                           |                                       | 9. Inside Locking Rod |                             |

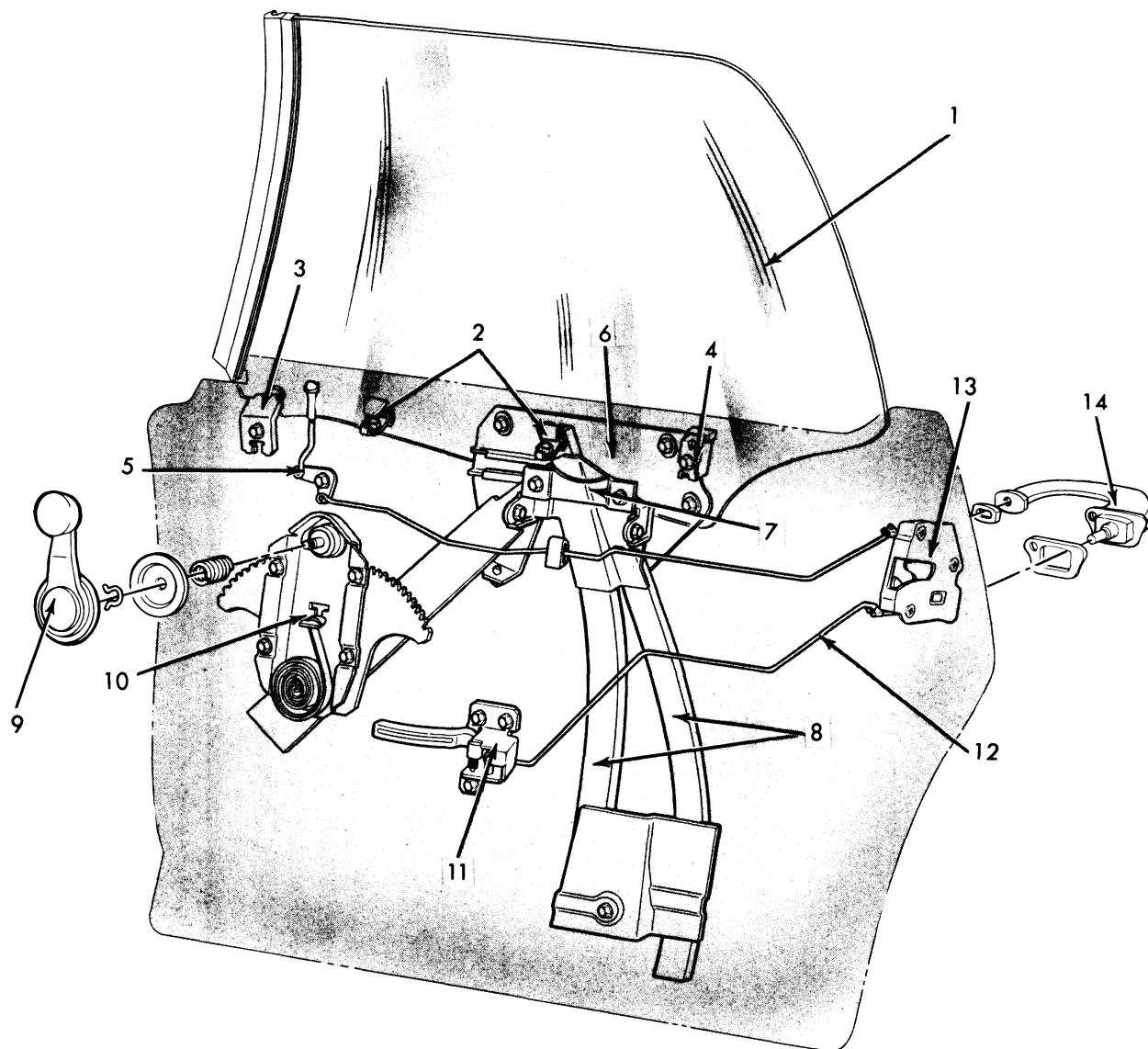


4136

Fig. 5-114-Rear Door Hardware - "B" Closed Styles

- |  |  |  |  |
|--|--|--|--|
| 1. Lower Rear Glass<br>Run Channel Lower<br>Attaching Bolt | 3. Lower Rear Glass<br>Run Channel Upper<br>Attaching Bolt | 5. Inner Panel Cam<br>Attaching Bolts                        | 7. Door Lock Attaching<br>Screws       |
| 2. Inside Locking Rod<br>Connecting Link Bolt              | 4. Door Lock Remote<br>Control Attaching<br>Bolts          | 6. Window Lower Sash<br>Channel Cam Stud<br>Nuts Access Hole | 8. Window Regulator<br>Attaching Bolts |

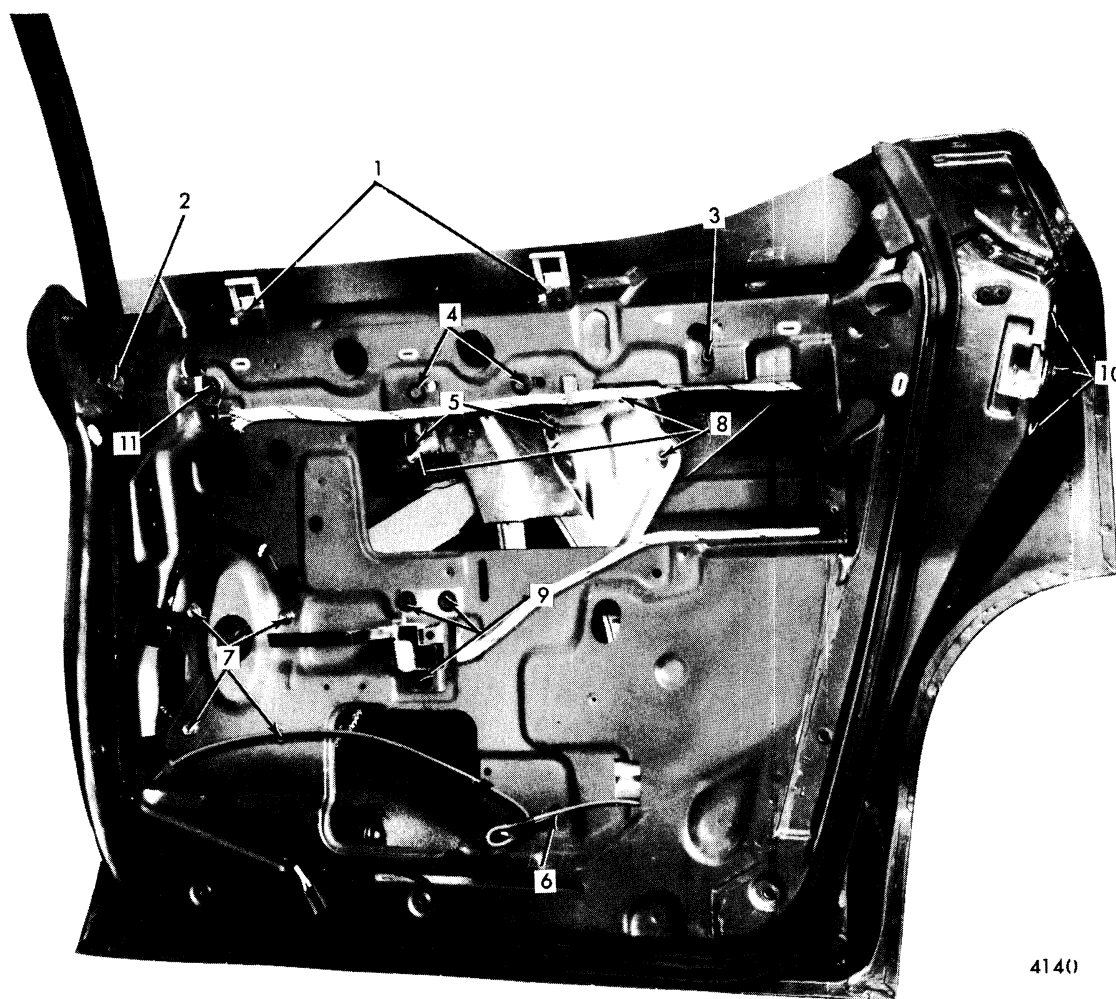




4746

Fig. 5-115-Rear Door Hardware - "B and C-39 and 49" Styles

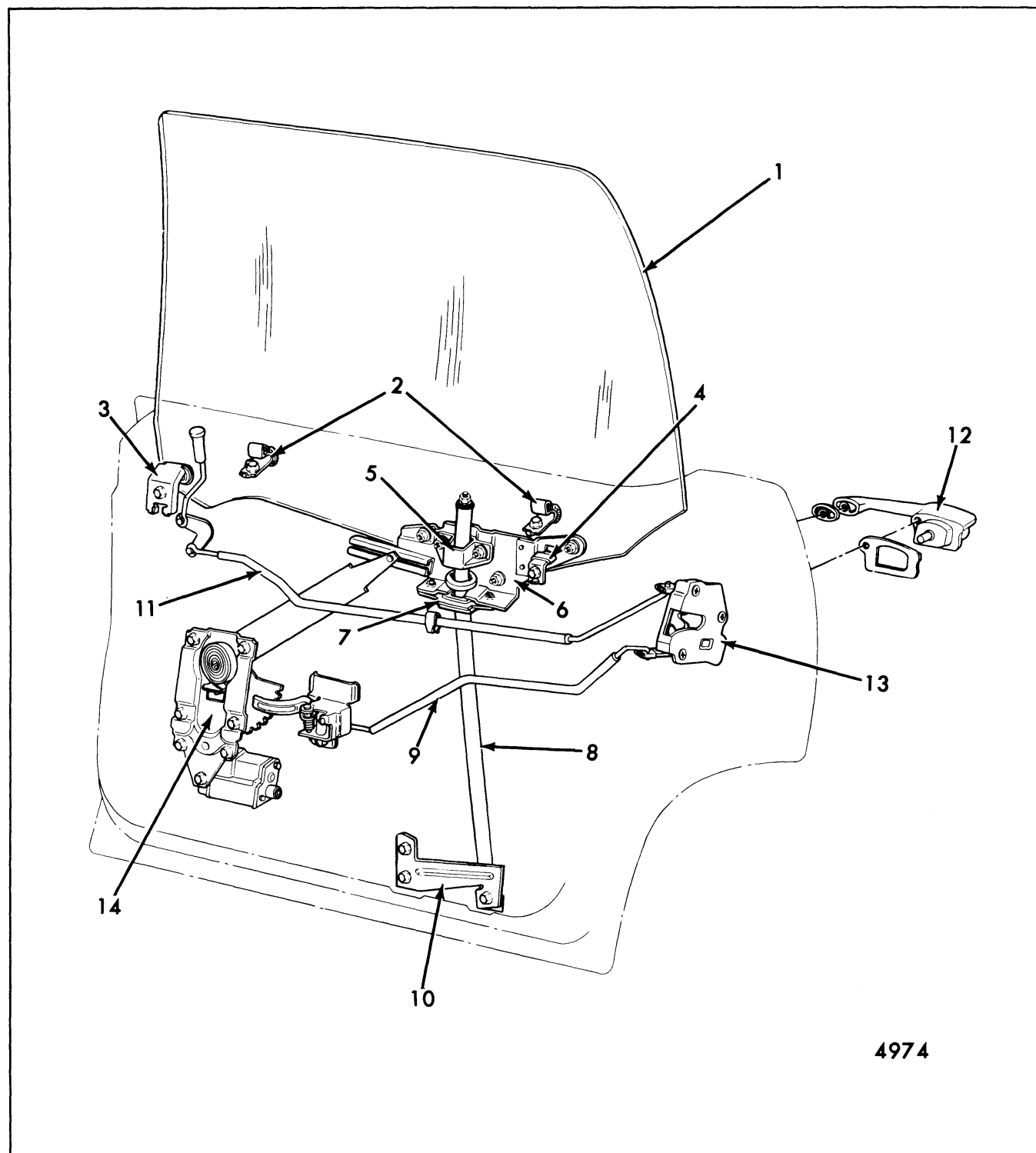
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|--------------------------------|-------------------------------|--|---|
| 1. Window Assembly             | 4. Window Rear Up-Travel Stop | 8. Guide Cam                                     | 12. Remote Control to Lock Connecting Rod |
| 2. Belt Trim Support Retainers | 5. Inside Locking Rod         | 9. Window Regulator Handle                       | 13. Lock Assembly                         |
| 3. Window Front Up-Travel Stop | 6. Lower Sash Guide Plate     | 10. Window Regulator                             | 14. Door Outside Handle                   |
|                                | 7. Guide Cam Support          | 11. Door Lock Remote Control and Handle Assembly | 15. Lock Cylinder                         |



4140

Fig. 5-116-Rear Door Hardware - "B and C-39 and 49" Styles

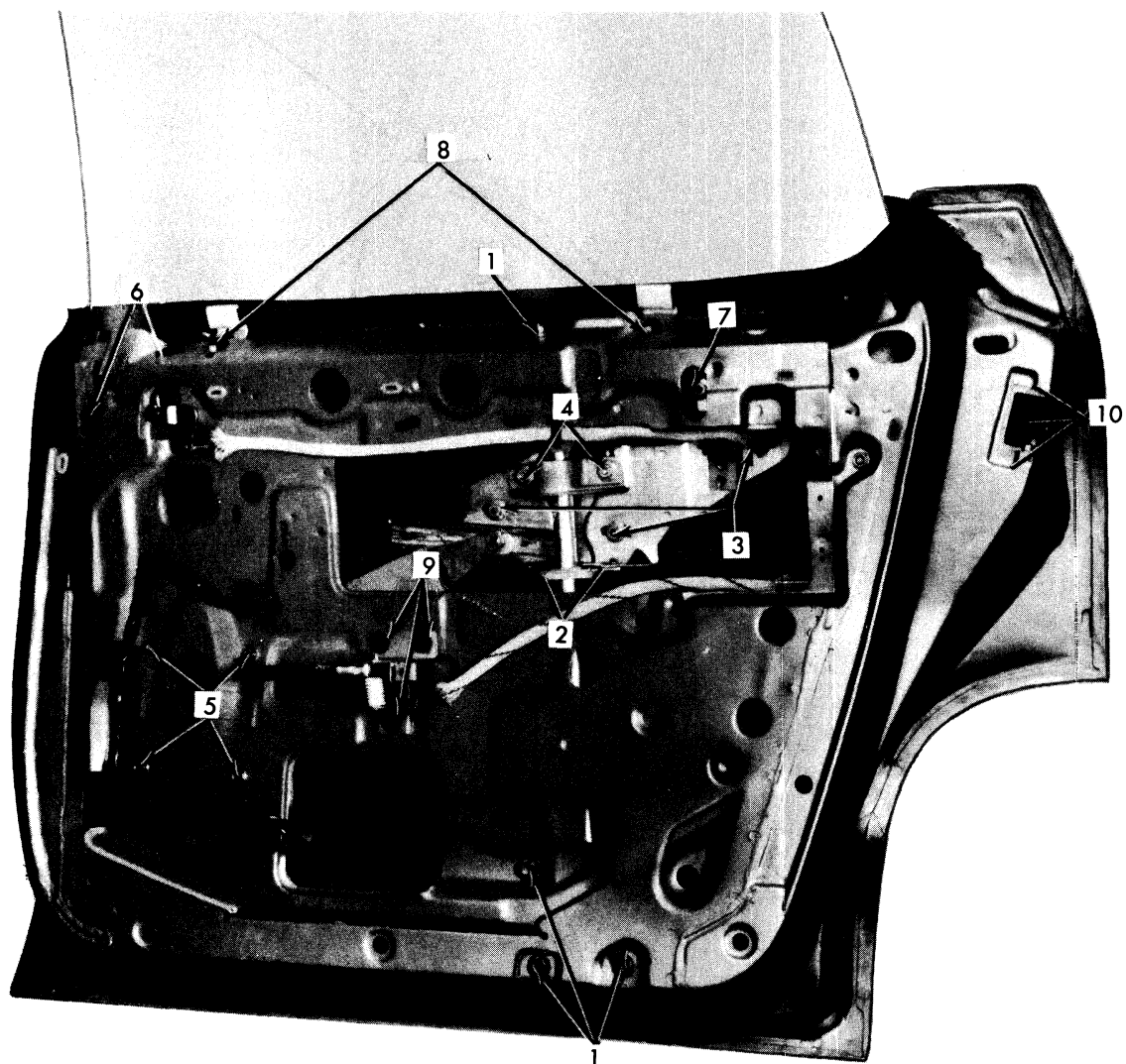
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|---|---|---|---|
| 1. Belt Trim Support Retainer Attaching Bolts | 4. Guide Cam Support to Inner Panel Bolts | 7. Window Regulator Attaching Bolts         | 10. Door Lock Attaching Screws                                |
| 2. Window Front Up-Travel Stop Bolt           | 5. Guide Cam to Guide Cam Support Bolts   | 8. Lower Sash Guide Plate Attaching Bolts   | 11. Inside Locking Rod to Lock Connecting Link Attaching Bolt |
| 3. Window Rear Up-Travel Stop Attaching Bolt  | 6. Guide Cam Lower Bolt                   | 9. Door Lock Remote Control Attaching Bolts |   |



4974

Fig. 5-117-Rear Door Hardware - 6CB69 Styles

- |                                |                                    |  |  |
|--------------------------------|------------------------------------|--|--|
| 1. Window Assembly             | 4. Window Rear Up-Travel Stop      | 7. Lower Sash Lower Guide Assembly       | 10. Bracket Guide Tube Lower Attaching |
| 2. Belt Trim Support Retainers | 5. Lower Sash Upper Guide Assembly | 8. Window Guide Tube                     | 11. Inside Locking Rod                 |
| 3. Window Front Up-Travel Stop | 6. Lower Sash Guide Plate Assembly | 9. Remote Control to Lock Connecting Rod | 12. Door Outside Handle                |
|                                |                                    |  | 13. Door Lock                          |
|                                |                                    |  | 14. Window Regulator                   |



4975

Fig. 5-118-Rear Door Hardware - 6CB69 Styles

- |   |   |  |  |
|---|---|--|--|
| 1. Tube Assembly,<br>Window Guide Tube<br>Attaching Bolt  | 3. Plate Assembly,<br>Lower Sash Guide<br>Attaching Bolts | 5. Regulator Assembly<br>Attaching Bolts | 7. Retainers, Belt Trim<br>Support, Attaching<br>Bolts |
| 2. Guide Assembly,<br>Lower Sash Lower<br>Attaching Bolts | 4. Guide Assembly,<br>Lower Sash Upper<br>Attaching Nuts  | 6. Stop, Front Up-Travel<br>Bolt         | 9. Remove Control, Door<br>Lock Attaching Bolts        |
|   |   | 7. Stop, Rear Up-Travel<br>Bolt          | 10. Door Lock Attaching<br>Screws                      |

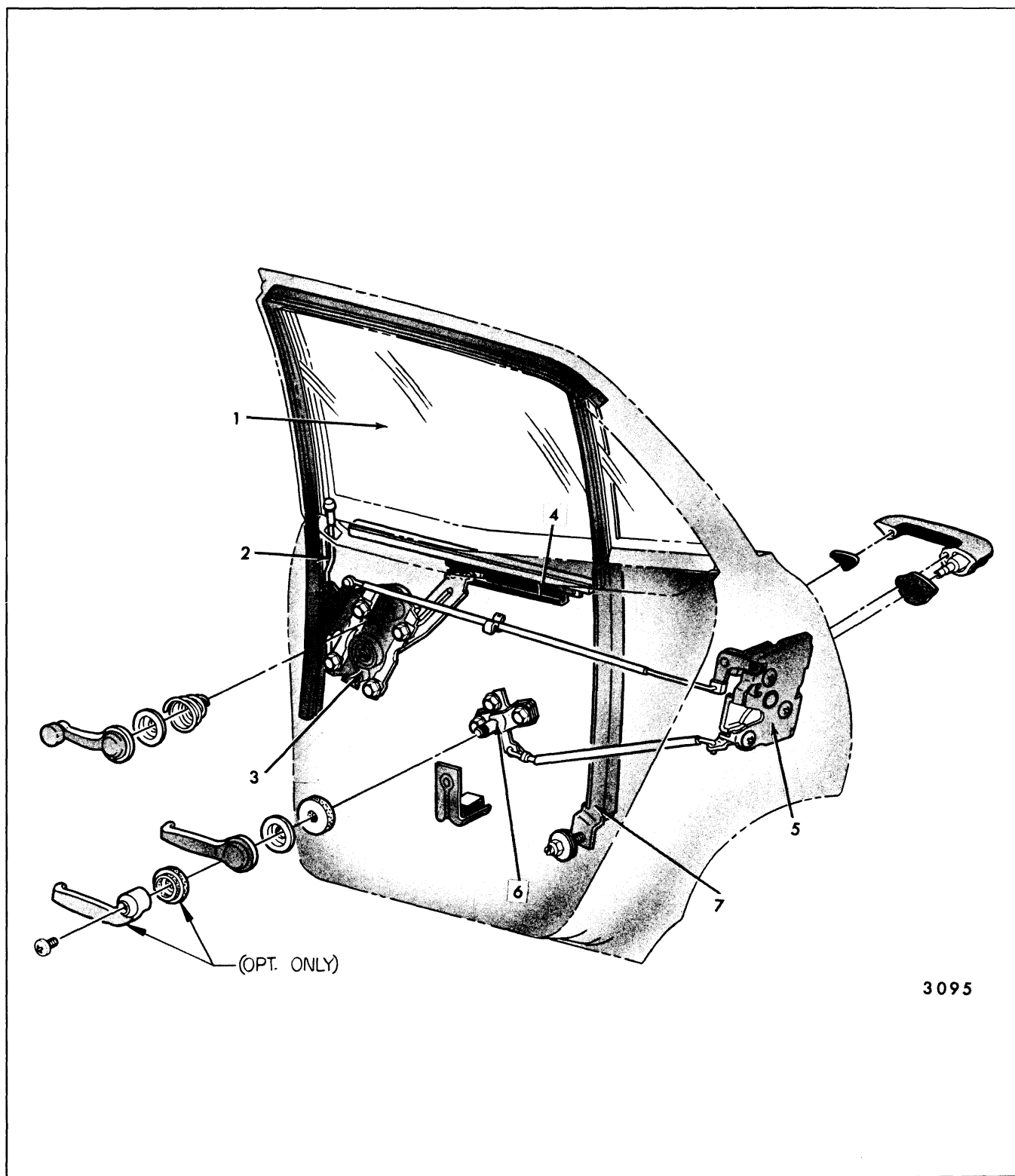


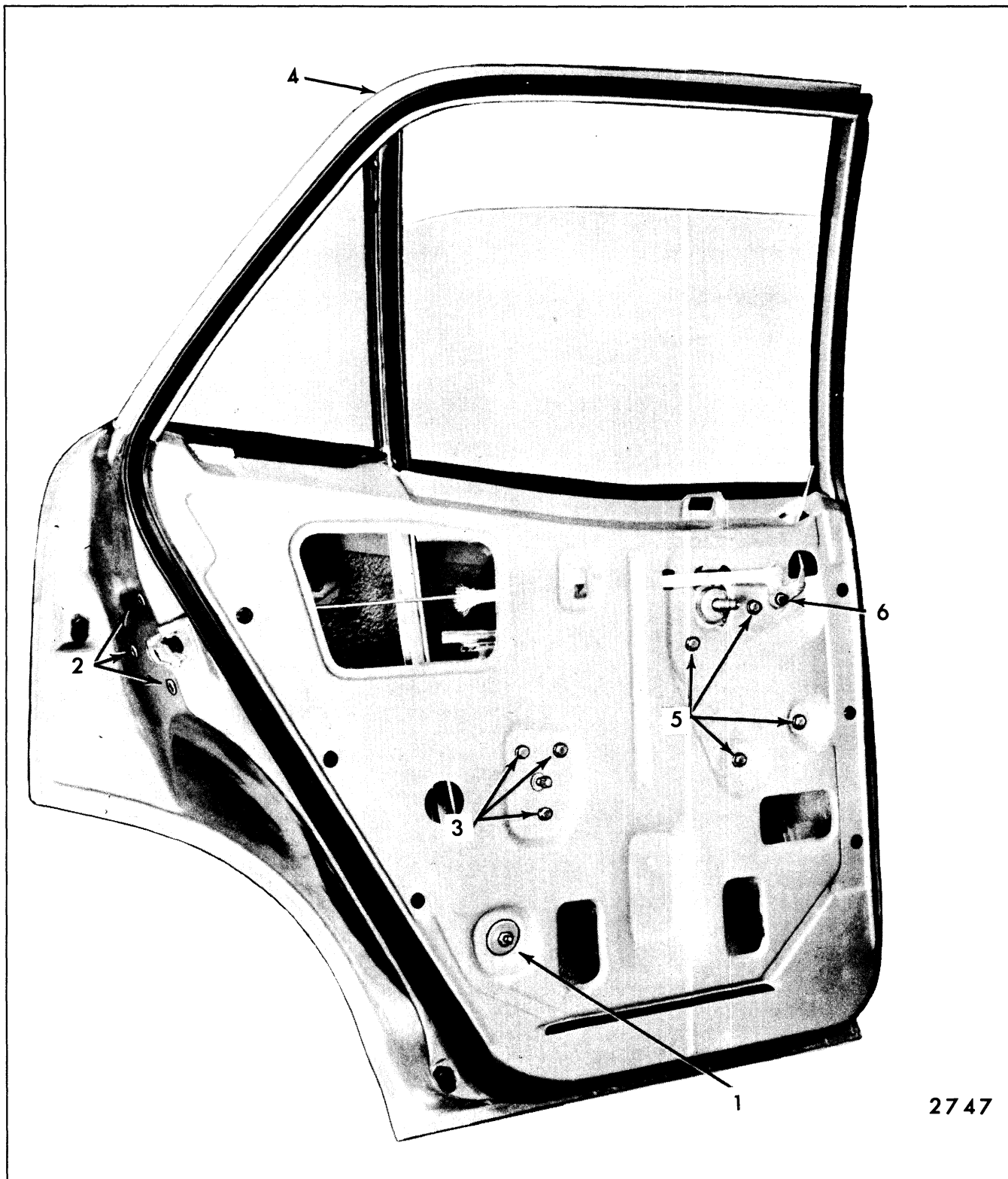
Fig. 5-119-Rear Door Hardware - "X" Style

- 1. Rear Door Window
- 2. Inside Locking Rod
- 3. Window Regulator

- 4. Lower Sash Channel
- 5. Door Lock

- 6. Door Lock Remote Control

- 7. Ventilator Division Channel



2747

Fig. 5-120-Rear Door Hardware - "X" Style

- |   |   |  |  |
|---|---|--|--|
| 1. Ventilator Division<br>Channel Lower<br>Adjusting Stud | 2. Door Lock Attaching<br>Screws                  | 4. Ventilator Division<br>Channel Upper<br>Attaching Screw | 6. Inside Locking Rod to<br>Lock Connecting Link<br>Attaching Bolt |
|   | 3. Door Lock Remote<br>Control Attaching<br>Bolts | 5. Window Regulator<br>Attaching Bolts                     |  |

a slight up-or-down adjustment is available at the body side (center pillar) hinge attaching screws.

### Door Removal and Installation

Doors can be removed by either removing the door from the hinges or by removing the door and hinges as an assembly from the center pillar.

1. Prior to loosening any hinge bolts, mark location of hinges on door or center pillar, depending on removal method being used.
2. On styles equipped with electric window regulators or power operated locks, proceed as follows:
  - a. Remove door trim assembly and inner panel water deflector.
  - b. Disconnect wire harness connector from regulator motor and/or wire harness connector from electric lock solenoid.

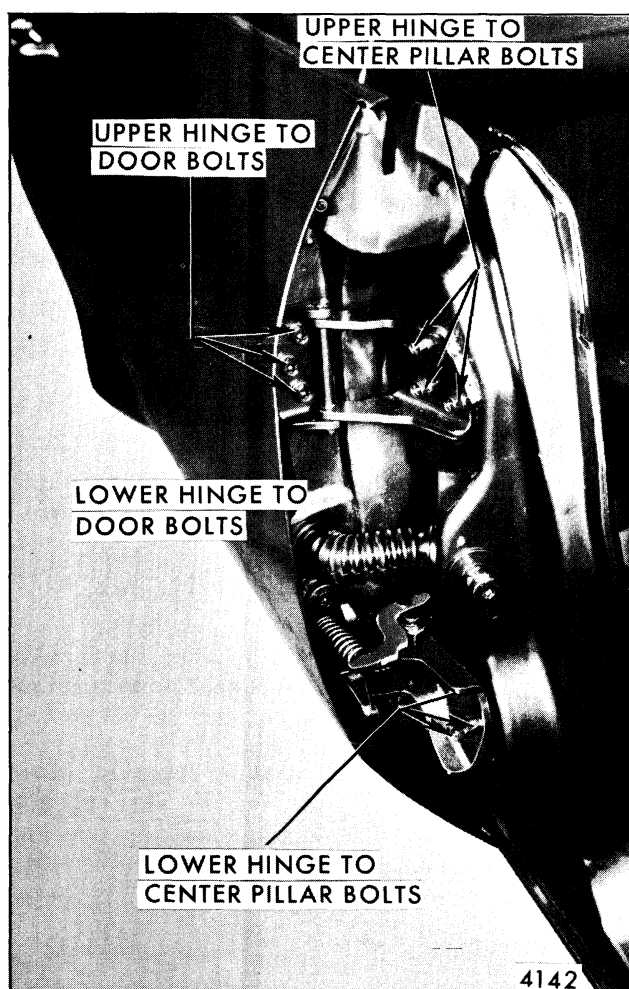


Fig. 5-121-Typical Rear Door Hinge Installation

- c. Remove electric conduit from door, then remove wire harness from door through conduit access hole.
3. With door properly supported, loosen upper and lower hinge attaching screws or bolts from door or center pillar and remove door from body. Figure 5-121 is typical of rear door hinge attachment.
4. Prior to reinstalling the door to the body, clean off old sealer at hinge attaching areas and apply a coat of heavy-bodied sealer to surface of hinge that mates with center pillar or door hinge pillar to prevent corrosion.
5. With aid of a helper, lift door into position and loosely install hinge screws. Align hinges within pencil marks previously made and tighten hinge screws.
6. Install all previously removed parts and check door for proper alignment.

**CAUTION:** When replacing or adjusting door hinges, torque bolts to 14 to 22 foot pounds.

### Hinge Removal and Installation

1. If both hinges are to be removed, remove rear door as previously described. Mark position of hinge on door or center pillar depending on which door removal method was used and remove hinge attaching bolts.
2. With door properly supported, remove upper or lower hinge to door and center pillar attaching bolts and remove hinge from door.
3. To install, reverse removal procedure. Apply a coat of heavy-bodied sealer to surface of hinge that mates with the center pillar and door hinge pillar to prevent corrosion. Adjust door as outlined below.

**CAUTION:** When replacing or adjusting door hinges, torque bolts to 14 to 22 foot pounds.

## REAR DOOR LOCK REMOTE CONTROL

### Description

There are two basic types of door lock remote controls; the "spindle" type (Fig. 5-120) which rotates upward when actuated and the "pull-in" type (Fig. 5-116) which rotates inboard when actuated. Remote controls are secured to the door inner panel by either two ("pull-in" type) or three ("spindle" type) attach-

ing bolts. On some styles, it is mounted on the in-board surface of the door inner panel, and on others, on the outboard surface.

### Removal and Installation

1. Remove rear door trim assembly (upper and lower portion on "A, B and C" styles) and inner panel water deflector.
2. Remove remote control attaching bolts ("3", Fig. 5-120).
3. Pivot remote to disengage it from remote control to lock connecting rod and remove remote control from door.
4. To install, reverse removal procedure. Make certain anti-rattle clip on lock connecting rod is properly positioned.

## REAR DOOR LOCK ASSEMBLY - All Styles

### Description

All styles use the fork bolt lock design which includes a safety interlock feature. Where necessary striker spacers should be used to insure satisfactory lock striker engagement. Refer to "Front and Rear Door" section for spacer usage.

Front and rear doors can be locked from the inside by depressing the passenger guard door lock button located on the upper door panel. All doors can be locked from the outside by simply depressing the interior door lock button and closing the door. The front doors can also be locked by using the square headed key.

**WARNING: FIGURES 5-122 AND 5-123 DEPICTS TYPICAL "X" AND "A, B AND C" STYLES, RESPECTIVELY, REAR DOOR LOCK ASSEMBLIES WHICH CAN BE USED FOR IDENTIFYING LOCKING PROBLEMS. DO NOT ATTEMPT REPAIRS TO CORRECT LOCK DISCREPANCIES. MAKE CORRECTIONS THROUGH REPLACEMENT OF LOCK ASSEMBLY.**

### Removal and Installation

1. Remove door trim assembly on "X" styles, (upper portion of door trim assembly on "A, B and C" styles), as previously described in the "Door Trim" portion of this section and operate glass to full-up position.

2. Working through access hole, disengage lock connecting rods from spring clips on door lock (for clip disengagement refer to "Door Lock Spring Clips" in Front and Rear Door Section).
3. Remove door lock attaching screws ("12", Figure 5-112) and remove lock from door.
4. To install, reverse removal procedure. Torque door lock attaching screws to 80 to 100 inch pounds.

## REAR DOOR INNER PANEL CAM - "B-35,45 and 69" Styles

### Removal and Installation

1. Remove upper and lower door trim assembly, mark location and remove inner panel cam attaching screws ("6", Fig. 5-113). Disengage cam from regulator balance arm roller and remove cam from door through access hole.
2. To install, reverse removal procedure. Adjust cam attaching screws to previously marked location for proper window operation. Correct adjustment of cam will prevent a rotated (cocked) door window.
3. Torque inner panel cam attachments to 60 to 90 inch pounds.

## REAR DOOR WINDOW ASSEMBLY - "A-29,35" Styles

### Description

The rear door window assembly consists of a frameless solid tempered safety plate glass window with a bolted-on lower sash guide plate assembly, which operates on a single vertical guide tube located in the center of the door.

Figure 5-124 is an exploded view of the window assembly and identifies the various components and their sequence of assembly.

**NOTE:** When replacing a window assembly, install new glass spacers and washers ("4" and "5", Fig. 5-124) and torque glass components attaching nuts to 72 inch pounds (6 foot pounds).

### Diagnosis and Adjustment

1. WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP - A rotated window condition (glass cocked in opening) can



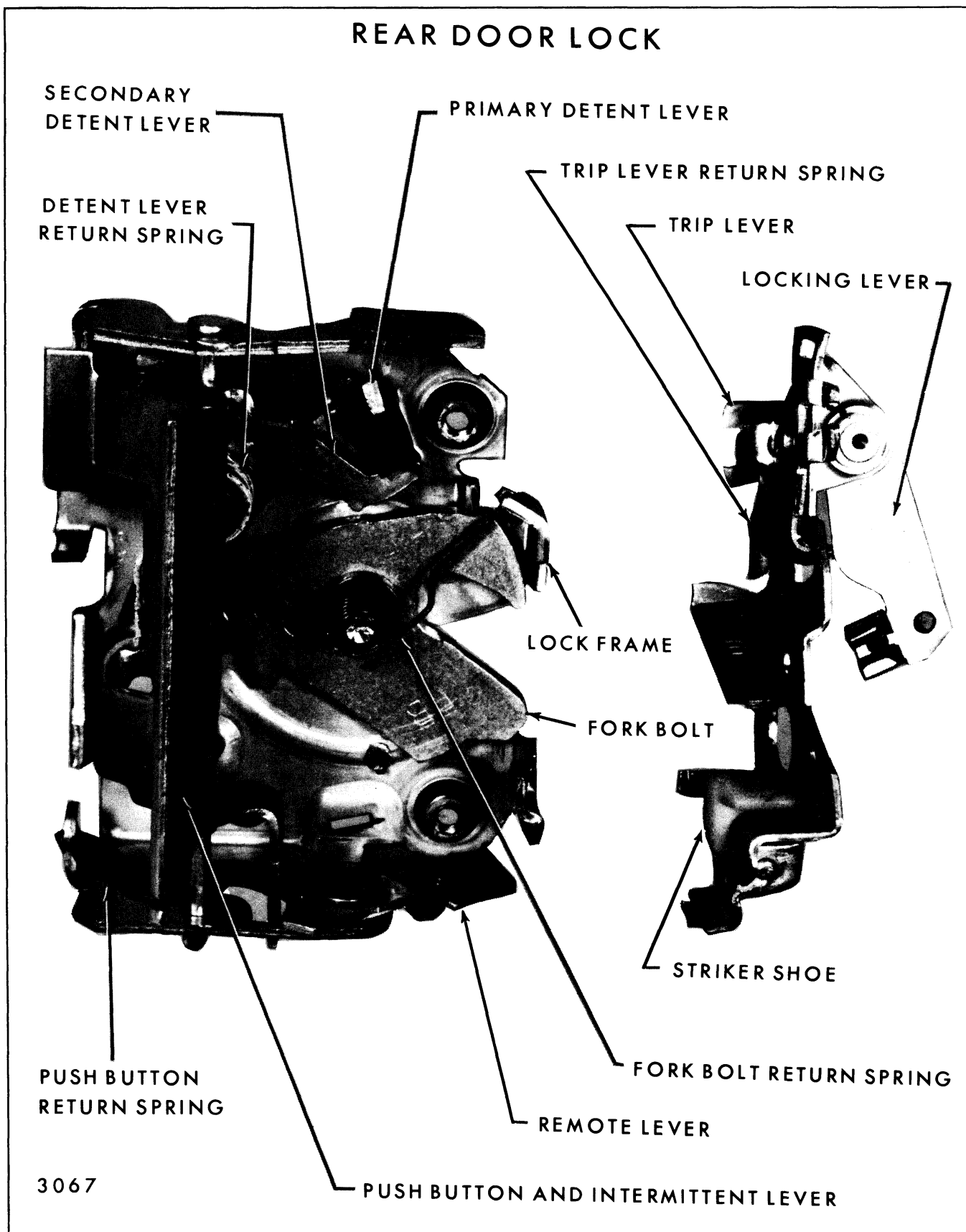


Fig. 5-122-Rear Door Lock Assembly - "X" Styles

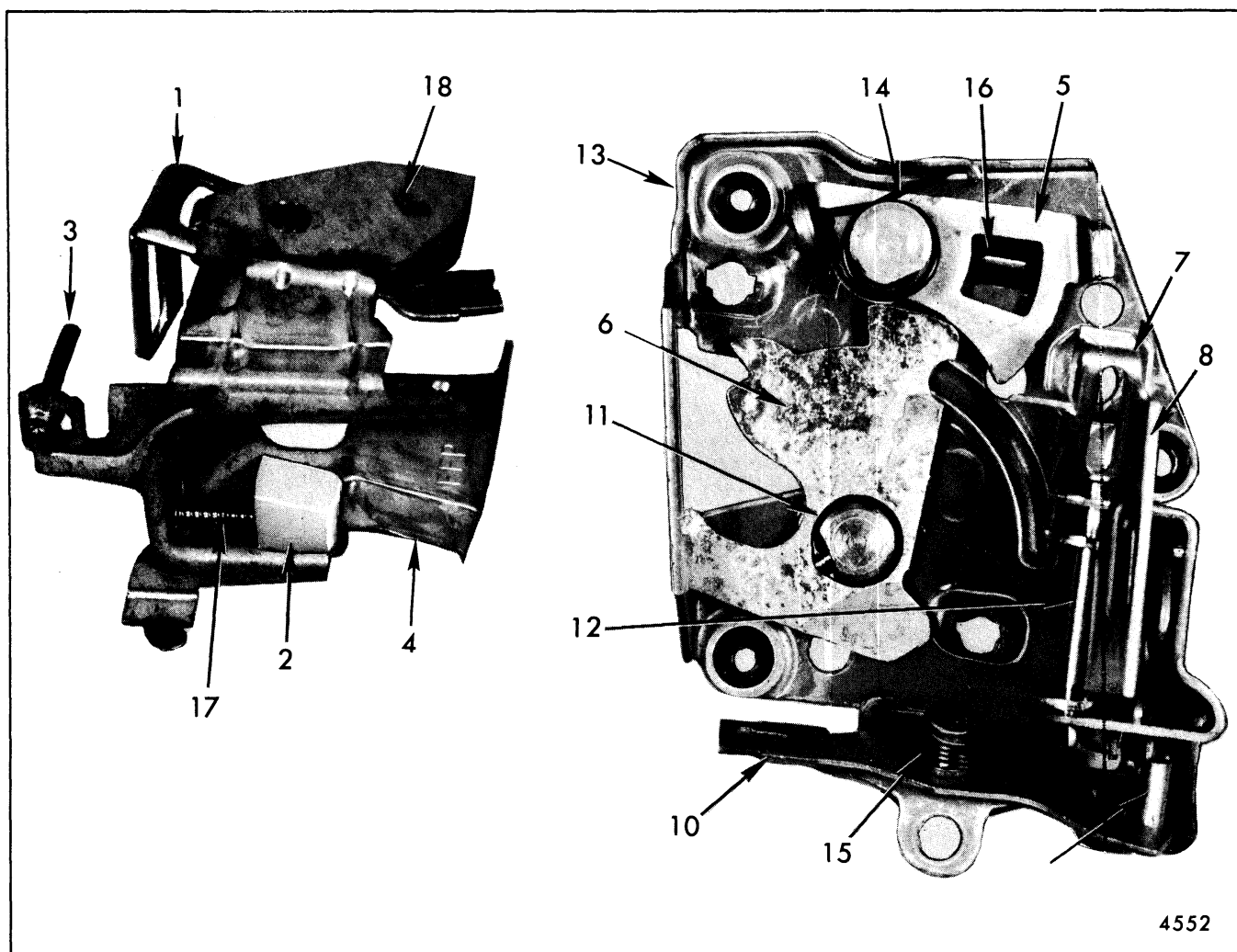


Fig. 5-123-Rear Door Lock Assembly - "A, B and C" Styles

- |                           |                          |   |                                 |
|---------------------------|--------------------------|---|---------------------------------|
| 1. Locking Lever          | 6. Fork Bolt             | 11. Spring Tension Washer (Replace Fork Bolt Return Spring) | 15. Push Button Return Spring   |
| 2. Sliding Shoe           | 7. Intermittent Lever    | 12. Push Button Pin   | 14. Detent Return Spring        |
| 3. Intermittent Guide Pin | 8. Push Button Lever     | 13. Lock Frame  | 16. Lock Silencer               |
| 4. Lock Back Plate        | 9. Transfer Lever        |   | 17. Sliding Shoe Pin and Spring |
| 5. Detent Lever           | 10. Remote Control Lever |   | 18. Overcenter Spring           |

be corrected by loosening front and rear up-travel stops ("2" and "3", Fig. 5-125) and lower sash upper guide assembly ("4", Fig. 5-125 and raising and lowering front edge of glass in relation to rear edge of glass, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, tighten lower sash upper guide attaching nuts and raise glass to establish proper contact with side roof rail weatherstrip. Tighten up-travel stop bolts. Torque upper travel stop attachment to 60 to 90 inch pounds, torque lower sash upper guide attaching nuts to 72 inch pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of glass in or out in relation to side roof rail weatherstrip, loosen belt trim support retainers ("1", Fig. 5-125) and lower sash lower guide assembly ("5", Fig. 5-125) and position glass inboard or outboard as required. Outboard adjustment of the lower guide moves the upper edge of the glass inboard. Conversely, inboard adjustment moves the upper edge of the glass outboard. With glass in a full-up position, repo-

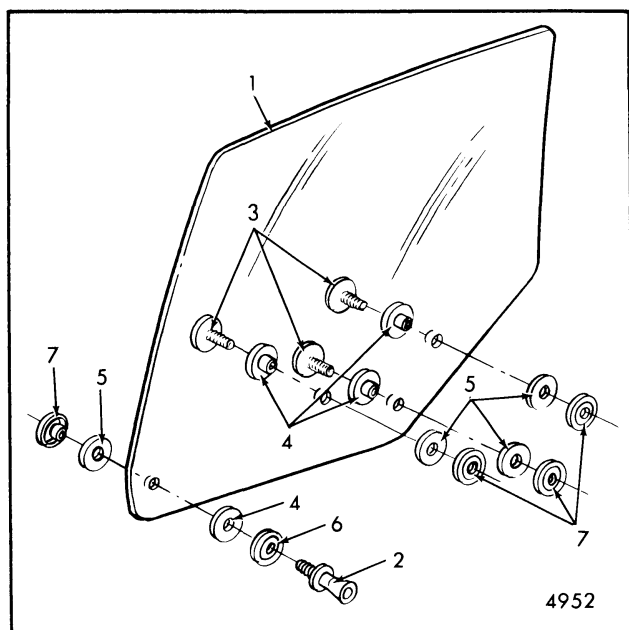


Fig. 5-124-Rear Door Window Assembly - "A-29,35" Styles

- |                   |                     |
|-------------------|---------------------|
| 1. Window Glass   | 5. Washer (Plastic) |
| 2. Up-Travel Stop | 6. Washer (Metal)   |
| 3. Bolt           | 7. Nut              |
| 4. Spacer         |                     |

sition belt trim support retainers against inner surface of glass sufficiently to stabilize glass, but not restrict operation. Torque previously loosened attaching components to 60 to 90 inch pounds.

- WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear up-travel stops ("2" and "3", Fig. 5-125) and operate window to desired position to establish proper glass to side roof rail weatherstrip contact. Then torque up-travel stop screws to 60 to 90 inch pounds.
- WINDOW TOO FAR FORWARD OR REARWARD IN BODY OPENING IN RELATION TO WEATHERSTRIPS** - To adjust window forward or rearward, loosen lower sash channel guide plate attaching nuts ("6", Fig. 5-125) and reposition glass as necessary. The attaching locations in the guide plate are slotted to permit fore and aft adjustment of the guide. When glass is properly positioned, torque the guide plate attaching nuts to 72 inch pounds.
- WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depend to a great extent on belt trim support retainers ("1", Fig. 5-125). The support retainers

should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass half-way through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation.

### GLASS ALIGNMENT GAUGE BLOCKS - "A-29,35" Styles

With a new design for the "A-29,35" styles, the door glass must be properly centered within a "fixed" window opening. To consistently locate the window glass to its specified parallel, in-out, and high-low relationships, glass alignment gauge blocks (tools J-24350-2 or equivalent) have been designed and released.

The following adjustment procedure outlines proper use of gauge blocks (Fig. 5-126) to obtain the required adjustments.

- Remove upper portion of door trim assembly, as previously described.
- Detach the side roof rail weatherstrip at the lower front and rear corners and carefully remove from the retainer.

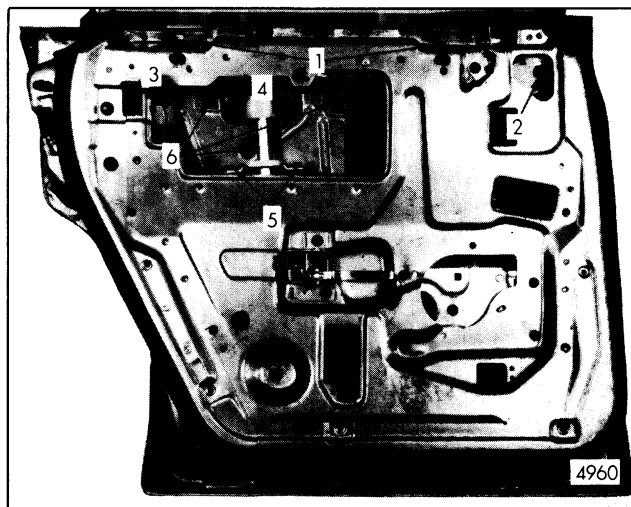


Fig. 5-125-Rear Door Window Removal and Adjustments - "A-29,35" Styles

- |  |   |
|--|---|
| 1. Belt Trim Support Retainer Screws     | 5. Lower Sash Lower Guide Attaching Screws        |
| 2. Window Front-Up Travel Stop Screw     | 6. Lower Sash Guide Plate Assembly Attaching Nuts |
| 3. Window Rear-Up Travel Stop Screw      |   |
| 4. Lower Sash Upper Guide Attaching Nuts |   |

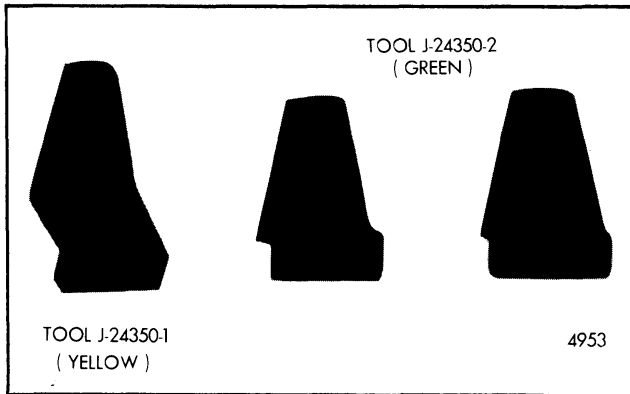


Fig. 5-126-Glass Alignment Gauge Blocks - Tool J-24350 or Equivalent

3. Lower rear door window and install gauge blocks, tool J-24350-2 or equivalent (Green), into the side roof rail weatherstrip retainer (handles protruding inboard), above the upper front and rear corners of the glass, as shown in Figure 5-127. Partially raise glass and install suction cups on interior surface of glass (Fig. 5-127) to enable adjuster to shift glass when making adjustments with door in a closed position.

**NOTE:** The grooves on the sides of the gauge blocks must be fully engaged with the side roof rail weatherstrip retainer.

4. Working from inside the body, with the door in the closed position, loosen front and rear up-travel stops ("2" and "3", Fig. 5-125) and belt trim support retainers ("1", Fig. 5-125).
5. Raise the rear door window assembly to approximately 1" from the full-up position, as illustrated in Figure 5-127. If the distance (space) between the upper edge of the glass and the front

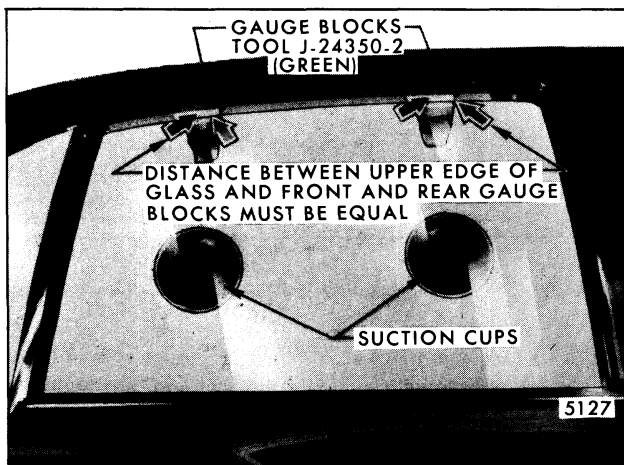


Fig. 5-127-Rear Door Window Alignment (Rotated "Cocked" Glass in Body Opening)

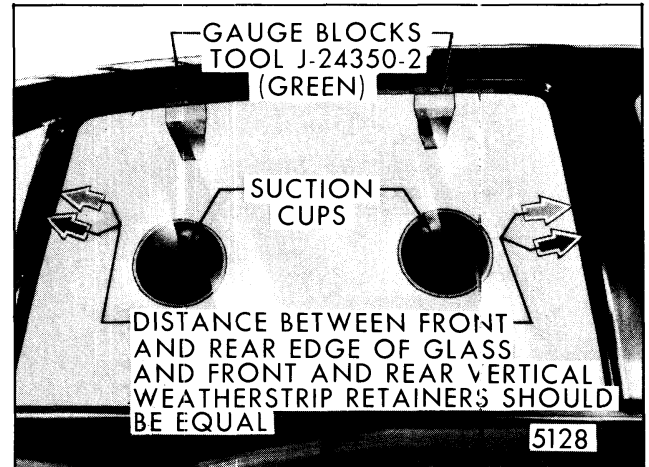


Fig. 5-128-Rear Door Window Alignment (Fore and Aft Adjustment)

and rear gauge blocks is equal (as shown in Fig. 5-127), proceed with Step 6. If the distance (space) between the upper edge of the glass and both upper gauge blocks is not equal, loosen lower sash upper guide attaching nuts ("4", Fig. 5-125) and adjust glass as necessary.

6. Raise rear door window assembly until contact is established between upper edge of glass and both upper gauge blocks. Determine if the rear door window is centered fore and aft in the window opening. The distance between the front and rear edge of glass and front and rear vertical weatherstrip retainers should be the same, as shown in Figure 5-128. If glass is properly positioned, proceed with Step 7. If rear door window assembly is not properly centered in its opening, loosen sash guide plate assembly attaching nuts ("6", Fig. 5-125), which control the fore and aft adjustment, and move glass forward or rearward as necessary.

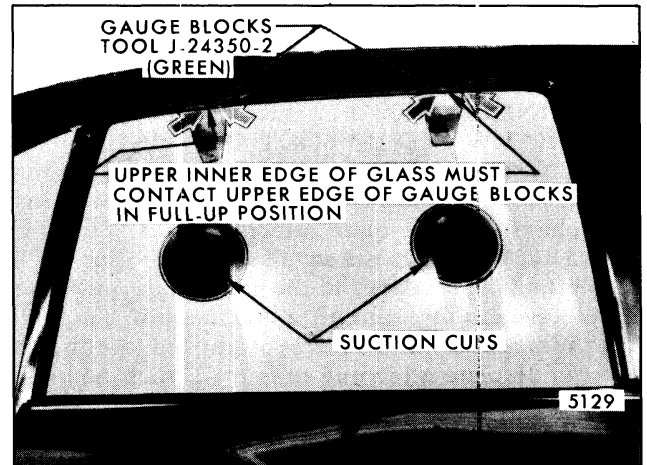


Fig. 5-129-Rear Door Window Alignment (In and Out and Up-Travel Adjustment)

7. Loosen lower sash lower guide assembly ("5", Fig. 5-125). Apply firm outboard pressure against the bottom of the lower sash guide plate assembly to remove slack in the system and to hold the upper inner edge of the glass inboard against the outer edge of the gauge blocks, as shown in Figure 5-129. Then, tighten lower guide attaching screws.

**NOTE:** Inner surface of glass must contact outer surface of the upper blocks during this adjustment. Excessive outboard pressure can tilt the glass too far inboard at the top resulting in excessive glass to side roof rail weatherstrip contact.

8. With the glass in the full-up position against the upper gauge blocks, as shown in Figure 5-129, tighten up-travel stops and adjust belt trim support retainers for proper tension against glass.
9. Torque the up-travel stop, belt trim support retainer and lower sash lower guide attaching screws to 60 to 90 inch pounds. Torque the lower sash upper guide and lower sash guide plate assembly attaching nuts to 72 inch pounds (6 foot pounds).
10. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip as previously described.
11. Reinstall upper portion of door trim assembly.

## REAR DOOR WINDOW ASSEMBLY

### Removal and Installation

1. Remove upper portion of door trim pad.
2. Remove front and rear up-travel stops ("2" and "3", Fig. 5-125) and belt trim support retainers ("1", Fig. 5-125).
3. Raise window to within two (2) inches of a full-up position and remove lower sash guide plate assembly to glass attaching nuts ("6", Fig. 5-125).
4. Tilt upper edge of glass inboard to disengage glass from sash plate, then remove the window by lifting straight up.
5. To install, reverse removal procedure. Adjust window for proper alignment and operation as previously described. Torque previously removed hardware component attaching screws to 60 to 90 inch pounds and sash guide plate assembly attaching nuts to 72 inch pounds.

## REAR DOOR WINDOW ASSEMBLY - "B" Closed Styles

### Description

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a bolt-on lower sash channel cam which is removed in the process of removing the window. When handling window, make certain glass does not develop edge chips or deep scratches which could cause glass to shatter.

### Adjustments

Adjustments have been provided to relieve a binding door glass due to misalignment of the glass run channel ("1" and "2", Fig. 5-130). In addition, the door window inner panel cam is adjustable which can correct a rotated (cocked) rear door window ("4", Fig. 5-130).

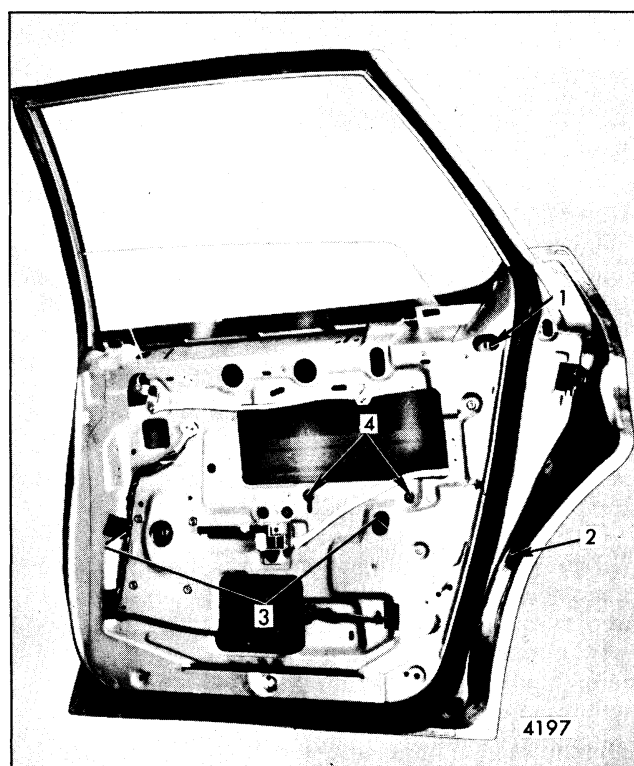


Fig. 5-130-Rear Door Window Removal and Adjustments - "B" Closed Styles

- |  |   |
|--|---|
| 1. Rear Glass Run Channel Upper Attaching Bolt | 3. Window Lower Sash Channel Cam Stud Nuts Access Holes |
| 2. Rear Glass Run Channel Lower Attaching Bolt | 4. Inner Panel Cam Bolts                                |

## Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Remove rear glass run channel upper and lower attaching bolts ("1" and "2", Fig. 5-130) and remove run channel from door.
3. Partially lower rear door window, remove lower sash channel cam to glass attaching stud nuts ("3", Fig. 5-130). Press lower sash channel cam inboard to disengage from attaching studs and lower window regulator to full-down position.
4. Tilt front edge of glass downward and remove inboard of door upper frame, rear edge first, then front edge.
5. To install, reverse removal procedure. Adjust window for proper operation as described in the previous procedure. Torque rear glass run channel attachments to 60 to 90 inch pounds. Torque sash channel cam attaching nuts to 72 inch pounds.

## REAR DOOR WINDOW ASSEMBLY - "B and C" Four-Door Hardtop Styles, Except 6CB69 Style

### Description

The rear door window assembly consists of a solid tempered safety plate glass window and a bolted-on lower sash guide plate roller assembly that operates in a double vertical guide assembly located in the center of the door.

Figure 5-131 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

**NOTE:** When replacing window assembly, install new glass spacers and washers ("2" and "3", Fig. 5-131) and torque glass component attaching nuts to 72 inch pounds (6 foot pounds).

### Diagnosis and Adjustment

1. **WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", Fig. 5-132) and lower sash guide plate bolts ("7", Fig. 5-132) and raising or lowering front edge of glass in relation to rear edge of glass, as required, to parallel upper

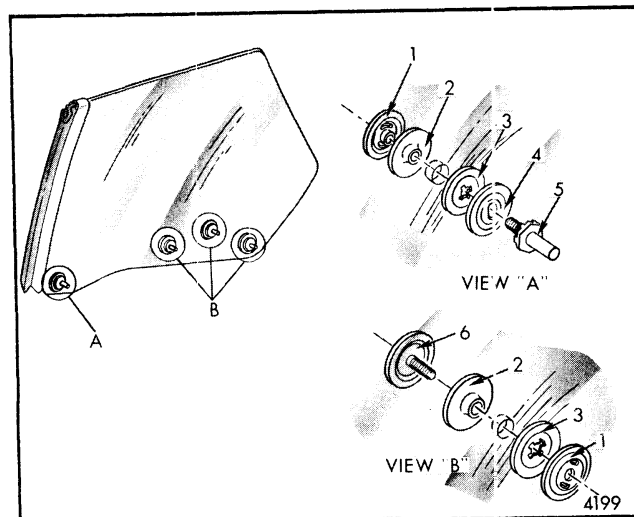


Fig. 5-131-Rear Door Window Assembly - "E and C" Four Door Hardtop Styles, Except 6CB69 Styles

- |                     |                     |
|---------------------|---------------------|
| 1. Tee-Nut          | 4. V/washer (Metal) |
| 2. Spacers          | 5. Stop, Up-Travel  |
| 3. Washer (Plastic) | 6. Bolt             |

edge of glass with side roof rail weatherstrip. Then, torque lower sash guide plate bolts to 60 to 90 inch pounds and raise glass to desired height to establish proper contact with side roof rail weatherstrip. Torque up-travel stop bolts to 60 to 90 inch pounds.

2. **WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of window in or out in relation to side roof rail weatherstrip, loosen upper end of center guide ("5", Fig. 5-132) and belt trim support retainers ("1", Fig. 5-132) and position guide inboard or outboard as required. Outboard adjustment of guide assembly moves upper edge of glass inboard. Conversely, inboard adjustment moves upper edge of glass outboard. With glass in a full-up position, position trim support retainers against inner surface of glass and torque previously loosened attaching bolts to 60 to 90 inch pounds.
3. **WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen front and rear up-travel stops ("2" and "3", Fig. 5-132) and operate window to desired position to establish proper contact with side roof rail weatherstrip. Torque up-travel stop bolts to 60 to 90 inch pounds.
4. **WINDOW TOO FAR FORWARD OR REARWARD IN BODY OPENING IN RE-**

**LATION TO WEATHERSTRIPS** - To adjust window forward or rearward, loosen upper center guide support ("4", Fig. 5-132) and reposition glass as necessary. Upper attaching locations are slotted to permit fore and aft adjustment of the guide. Torque guide support attachments to 60 to 90 inch pounds.

5. **WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depends to a great extent on the adjustment of the belt trim support retainers ("1", Fig. 5-132).

The trim support retainers should contact the glass through- out the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass half-way through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation.

### GLASS ALIGNMENT GAUGE BLOCKS - "B-C" Four-Door Hardtop Styles, Except 6CB69 Styles

To facilitate adjustment of this glass and to insure

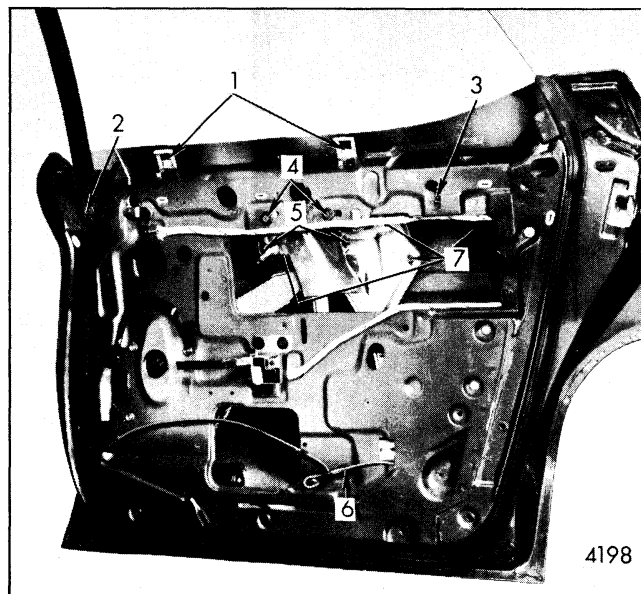


Fig. 5-132-Rear Door Window Removal and Adjustments - "B and C-39,49" Styles

- |                                     |  |
|-------------------------------------|--|
| 1. Belt Trim Support Retainer       | 5. Center Guide Cam to Upper Cam Support Bolts |
| 2. Window Front Up-Travel Stop Bolt | 6. Center Guide Cam Lower Bolt                 |
| 3. Window Rear Up-Travel Stop Bolt  | 7. Lower Sash Guide Plate Stud Nuts            |
| 4. Center Guide Cam Support Bolts   |  |

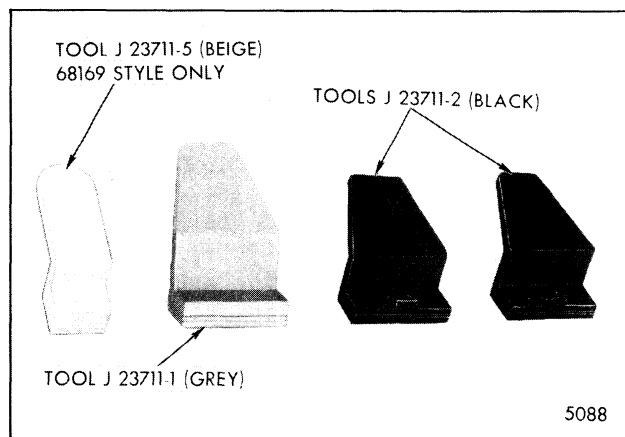


Fig. 5-133-Glass Alignment Gauge Blocks, Tool J-23711 or Equivalent

that glass alignments within specifications are consistently performed, glass alignment gauge blocks, tool J-23711 or equivalent (Fig. 5-133) should be used. For proper use gauge blocks, refer to the following procedure.

1. Remove upper portion of door trim assembly as previously described in this section of the manual.
2. Detach the side roof rail weatherstrip at the lower rear corner (screw retained at rear edge) and carefully remove from the retainer over the door window, as shown in Figure 5-134.
3. Lower front and rear door windows and install gauge blocks, tool J-23711-2 (Black), or equivalent into the side roof rail weatherstrip retainer above the upper front and rear corners of the glass, as shown in Figure 5-134.

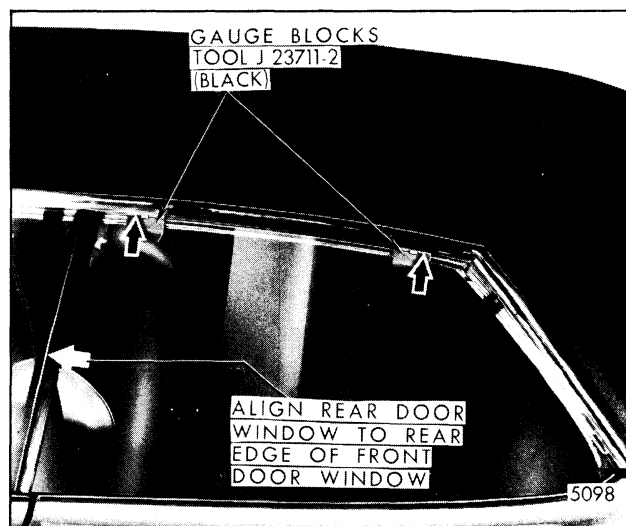


Fig. 5-134-Rear Door Window Alignment

**NOTE:** The grooves on the sides of the gauge blocks must be fully engaged with the side roof rail weatherstrip retainer.

4. Working from inside the body, with the door in the closed position, loosen front and rear up-travel stops ("2" and "3" Fig. 5-132) and belt trim support retainers ("1", Fig. 5-132).
5. Raise the rear door window until contact is established between upper edge of glass and one or more of the two gauge blocks.

If upper edge of glass contacts both gauge blocks simultaneously (refer to Fig. 5-134), proceed with Step 6.

If upper edge of glass does not contact both blocks simultaneously, completely loosen lower sash guide plate stud nuts ("7", Fig. 5-132) and manipulate the glass until the upper edge of glass contacts both blocks in the full-up position. Tighten guide plate stud nuts.

6. Raise rear door window assembly until contact is established between upper edge of glass and both upper gauge blocks. Then, raise front door window assembly. If the front edge of the rear door window assembly is properly positioned in relation to rear edge of front door window assembly, as shown in Figure 5-134, proceed with Step 7. If rear door window assembly is not properly positioned in relation to front door window assembly, loosen fore and aft adjustment on guide cam support ("4", Figure 5-132) and move glass forward or rearward as necessary.
7. Completely loosen upper end of (center) guide cam support ("5", Fig. 5-132). Apply firm outboard pressure against the upper end of the guide cam to remove slack in the system and to hold the upper inner edge of the glass inboard against the outer edge of the gauge blocks, as shown in Figure 5-134. Then, tighten (center) guide cam support attaching bolts.

**NOTE:** Inner surface of glass must contact outer surface of the upper blocks during this adjustment.

8. With the glass in the full-up position against the upper gauge blocks, tighten up-travel stops and adjust belt trim support retainers for proper tension against glass.
9. Torque all previously loosened hardware attachment components, except the sash guide plate stud nuts to 60 to 90 inch pounds. Torque the guide plate stud nuts to 72 inch pounds.

10. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip with a pumpable sealer. Reinstall upper portion of door trim assembly.

## REAR DOOR WINDOW ASSEMBLY

### Removal and Installation

1. Remove upper portion of door trim assembly as previously described.
2. With glass in a partially down position, loosen front and rear window belt trim support retainers ("1", Fig. 5-132) and up-travel stops ("2" and "3", Fig. 5-132). Then rotate the stops sufficiently to allow glass to bypass stops when removing window.
3. With window in a partial-down position, remove lower sash guide plate to glass attaching stud nuts ("7", Fig. 5-132), then tilt upper edge of glass inboard to disengage guide plate from studs on glass. Remove glass from door by lifting rear edge of glass upward, then slide glass rearward to align guide plate studs with notch provided at rear of door inner panel.
4. To install, reverse removal procedure. Torque trim support retainer and up-travel stop attachments to 60 to 90 inch pounds. Torque sash guide plate to glass attaching nuts to 72 inch pounds. Adjust for proper window alignment and operation as described previously.

## REAR DOOR WINDOW ASSEMBLY - 6CB69 Style

### Description

The rear door window assembly consists of a solid tempered safety plate glass window with a bolted-on lower sash guide plate assembly, which operates on a single vertical guide tube located in the center of the door.

Figure 5-135 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

**NOTE:** When replacing window assembly, install new glass spacers and washers ("2" and "3", Fig. 5-135) and torque glass components attaching nuts to 72 inch pounds (6 foot pounds).



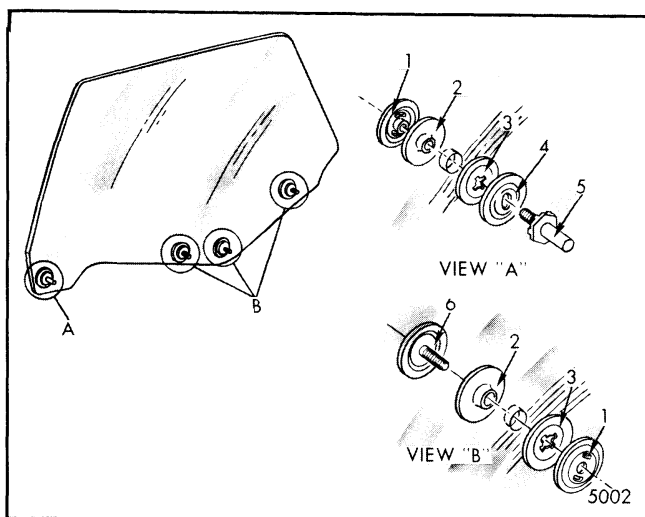


Fig. 5-135-Rear Door Window Assembly - 6CB69 Styles

- |                     |                    |
|---------------------|--------------------|
| 1. Tee-Nut          | 4. Washer (Metal)  |
| 2. Spacer           | 5. Stop, Up-Travel |
| 3. Washer (Plastic) | 6. Bolt            |

### Diagnosis and Adjustments

- 1. WINDOW NOT PARALLEL WITH SIDE ROOF RAIL WEATHERSTRIP** - A rotated window condition (glass cocked in opening) can be corrected by loosening front and rear up-travel stops ("2" and "3", Fig. 5-136) and lower sash upper guide assembly ("5", Fig. 5-136 and raising or lowering front edge of glass in relation to rear edge of glass, as required, to parallel upper edge of glass with side roof rail weatherstrip. Then, tighten (torque to 72 inch pounds) lower sash upper guide attaching bolts and raise glass to establish proper contact with side roof rail weatherstrip. Torque up-travel stop bolts to 60 to 90 inch pounds.
- 2. WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust upper edge of window in or out in relation to side roof rail weatherstrip, loosen belt trim support retainers ("1", Fig. 5-136) and lower sash lower guide assembly ("6", Fig. 5-136) and position glass inboard or outboard as required. Outboard adjustment of lower guide moves upper edge of glass inboard. Conversely, inboard adjustment moves upper edge of glass outboard. With glass in a full-up position, move trim support retainers against inner surface of glass. Torque previously loosened attachments to 60 to 90 inch pounds.
- 3. WINDOW TOO HIGH OR LOW IN RELATION TO SIDE ROOF RAIL WEATHERSTRIP** - To adjust window up-travel, loosen

front and rear up-travel stops ("2" and "3", Fig. 5-136) and operate window to desired position to establish proper contact with side roof rail weatherstrip. Torque up-travel stops to 60 to 90 inch pounds.

- 4. WINDOW TOO FAR FORWARD OR REARWARD IN BODY OPENING IN RELATION TO WEATHERSTRIPS** - To adjust window forward or rearward loosen lower sash channel guide plate attaching nuts ("4", Fig. 5-136) and reposition glass as necessary. The attaching locations in the guide plate are slotted to permit fore and aft adjustment of the glass. Torque attaching nuts to 60 to 90 inch pounds.
- 5. WINDOW MECHANISM BINDS WHEN OPERATING WINDOW ASSEMBLY** - Ease of window operation and window stability depend to a great extent on the adjustment of the window belt trim support retainers ("1", Fig. 5-136). These retainers should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass. Contact should be sufficient to stabilize glass, but not restrict ease of window operation.

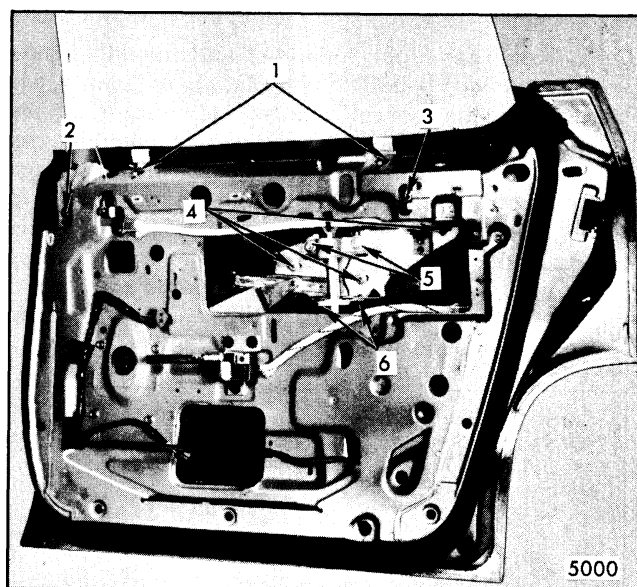


Fig. 5-136-Rear Door Window Removal and Adjustment - 6CB69 Styles

- |                                     |  |
|-------------------------------------|--|
| 1. Belt Trim Support Retainer Bolts | 4. Lower Sash Guide Plate Assembly to Glass Attaching Nuts |
| 2. Front Up-Travel Stop Bolt        | 5. Lower Sash Upper Guide Assembly Bolts                   |
| 3. Rear Up-Travel Stop Bolt         | 6. Lower Sash Lower Guide Assembly Bolts                   |

Torque belt trim support retainer attachments to 60 to 90 inch pounds.

## GLASS ALIGNMENT BLOCKS - 6CB69 Styles

With incorporation of a single vertical guide tube in the center of the door, most window adjustments will be made from a guide plate attached to the lower edge of the glass. Fine adjustments of this glass are more sensitive than conventional styles utilizing front and rear guides, as relatively small movements at adjusting locations will result in large movements at the upper edge of glass.

To facilitate adjustment of this glass and to maintain consistent glass alignment to specifications, glass alignment gauge blocks tools J-23711-2 and 5 or equivalent (Fig. 5-137) should be used. For proper use of gauge blocks refer to the following adjustment procedure.

### Adjustment

1. Remove upper portion of door trim assembly and lower inner panel water deflector to gain access to door hardware components.
2. Detach side roof rail weatherstrip at lower front and rear corners and remove from retainer.
3. Lower rear door window and install gauge blocks, tool J-23711 -2 (Black), or equivalent into the side roof rail weatherstrip retainer above the upper front and rear corners of the glass as shown in Figure 5-138. Then, install gauge block, tool J-23711-5 (Beige), or equivalent into the center pillar retainer above the beltline. Raise door window and install glass suction cups on interior surface of glass to enable adjuster to shift glass when making adjustments with door in a closed position (Fig. 5-138).

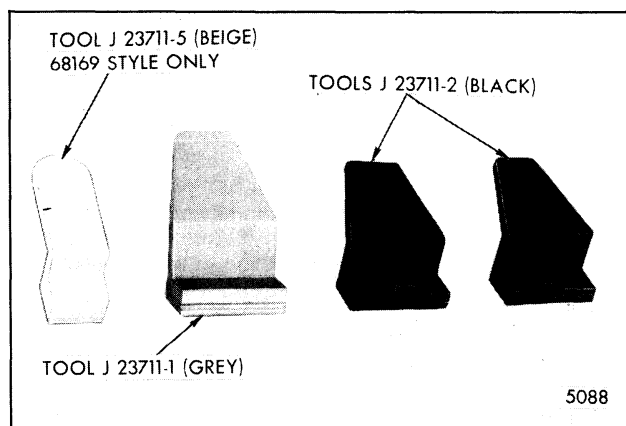


Fig. 5-137-Glass Alignment Gauge Blocks

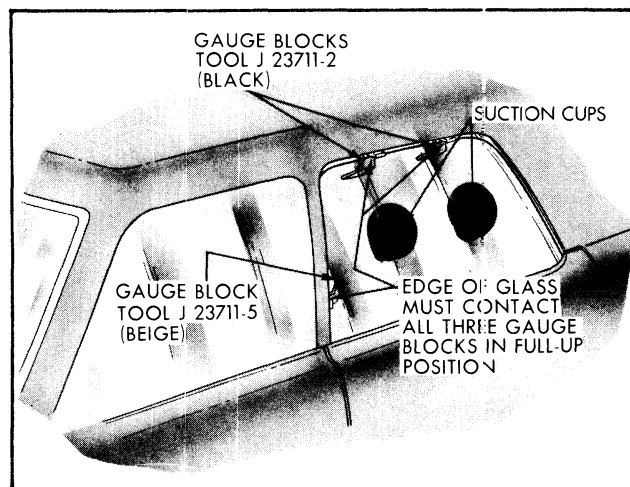


Fig. 5-138-Rear Door Window Alignment (Fore and Aft and Rotated "Cocked" Glass in Body Opening Adjustment)

**NOTE:** The grooves on the sides of the gauge blocks must be fully engaged with the weather-strip retainer.

4. Working from inside the body, with the door in the closed position, loosen front and rear up-travel stops ("2" and "3", Fig. 5-136) and belt trim support retainers ("1", Fig. 5-136).
5. Raise door window assembly until contact is established between the upper and/or forward edge of glass and one or more of the three gauge blocks.

If upper and forward edge of glass contact all three gauge blocks simultaneously (as shown in Fig. 5-138), proceed with Step 6. If, however, upper and forward edge of glass does not contact all three blocks simultaneously, completely loosen lower sash channel guide plate ("4", Fig. 5-136) and lower sash upper guide assembly "5", Fig. 5-136) and manipulate the glass by hand until upper and forward edge of glass contacts all three gauge blocks in the full-up position (as shown in Fig. 5-138). Tighten guide plate and upper guide assembly attaching bolts.

6. Loosen lower sash lower guide assembly ("6", Fig. 5-136). Apply firm outboard pressure against the bottom of the lower sash guide plate assembly to remove slack in the system and to hold the upper inner edge of glass inboard against outer edge of gauge blocks. Then, tighten lower guide assembly attaching bolts.

**NOTE:** Inner surface of glass must contact outer surface of the upper gauge blocks during this adjustment. Excessive outboard pressure can tilt the glass too far inboard at the top resulting in excessive glass to side roof rail weatherstrip contact.

7. With the glass in the full-up position against the upper gauge blocks as shown in Figure 5-138, tighten adjustable up- travel stops. Adjust belt trim support retainers for proper tension against glass.
8. Torque the previously loosened belt trim support retainer, up- travel stop and lower sash lower guide attachments to 60 to 90 inch pounds. Torque the lower sash upper guide and lower sash guide plate assembly attaching nuts to 72 inch pounds.
9. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and reseal weatherstrip with a pumpable sealer.
10. Reposition inner panel water deflector and reinstall upper portion of trim panel.

## REAR DOOR WINDOW ASSEMBLY

### Removal and Installation

1. Remove upper portion of door trim assembly as previously described.
2. Loosen belt trim support retainer attachments ("1", Fig. 5-136) and remove front and rear up-travel stops ("2 and 3", Fig. 5-136).
3. Remove lower sash guide plate assembly to glass attaching stud nuts ("4", Fig. 5-136). Tilt upper edge of glass inboard to disengage glass from guide plate, then remove the window from the door by lifting straight-up.
4. To install, reverse removal procedure. Torque previously removed trim support retainer and up-travel stop attachments to 60 to 90 inch pounds. Torque sash guide plate to glass attaching nuts to 72 inch pounds. Adjust window for proper alignment as described previously.

## REAR DOOR WINDOW STATIONARY VENTILATOR DIVISION CHANNEL - "X-69" Style

### Description

The stationary ventilator division channel is held in place by one division channel to door upper frame attaching screw and one lower adjusting stud and nut. This assembly acts as a rear door window rear glass run channel and also holds the stationary ventilator window in proper position.

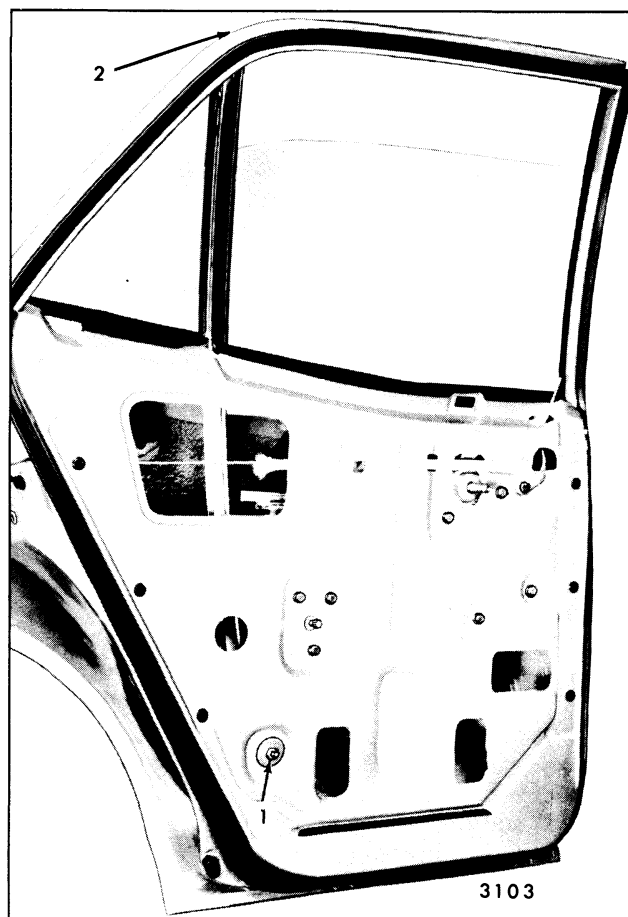


Fig. 5-139-Rear Door Window Removal and Adjustments - "X-69" Styles

- |  |  |
|--|--|
| 1. Ventilator Division<br>Channel Lower<br>Adjusting Stud and<br>Nut | 2. Ventilator Division<br>Channel Upper<br>Attaching Screw |
|--|--|

### Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector sufficiently to gain access to the lower adjusting stud and nut ("1", Fig. 5-139).
2. Remove door window lower stop (rubber bumper) from down stop support bracket on door inner panel.
3. Remove ventilator division channel lower adjusting stud and nut ("1", Fig. 5-139).
4. Carefully lower door window and remove division channel to door upper frame attaching screw. ("2", Fig. 5-139).

5. Rotate upper section of division channel forward and inboard and remove assembly from door.
6. To install, reverse removal procedure. In-or-out and fore-or-aft adjustment of this part is available at the lower adjusting stud and nut only.

### REAR DOOR WINDOW STATIONARY VENTILATOR ASSEMBLY - "X-69" Style

#### Description

The rear door stationary ventilator assembly is set within a rubber channel and held into place by pressure of the ventilator division channel.

#### Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. Remove stationary ventilator division channel as previously described.
3. Pull stationary ventilator window forward and remove from door.
4. To install, reverse removal procedure.

### REAR DOOR WINDOW ASSEMBLY - "X-69" Style

#### Description

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a pressed-on lower sash channel assembly.

#### Adjustments

Adjustment has been provided to relieve a binding door glass due to misalignment of the ventilator division channel ("1", Fig. 5-139).

#### Removal and Installation

1. Remove door trim assembly and inner panel water deflector.
2. Remove rear door window stationary ventilator assembly as previously described.
3. Slide window regulator lift arm roller out of window lower sash channel cam and remove glass inboard of door upper frame.

4. To install, reverse removal procedure. Adjust window for proper operation as previously described.

### REAR DOOR WINDOW REGULATOR - Manual - "A-29,35" Styles

#### Removal and Installation - Refer to Figure 5-112

1. Remove upper and lower door trim assembly and inner panel water deflector.
2. Raise window to a full-up position and secure in place by positioning rubber door stop wedges between the door glass and inner panel at front and rear of door (Fig. 5-140).
3. Remove four (4) window regulator attaching bolts.
4. Disengage regulator lift arm from lower sash guide plate cam and remove window regulator through large access hole, lift arm first.
5. To install, reverse removal procedure. Torque regulator attaching bolts to 72 inch pounds.

### REAR DOOR WINDOW REGULATOR - Electric - "A-29,35" Styles

#### Removal and Installation - Refer to Figure 5-112

1. Remove upper and lower door trim assembly and inner panel water deflector.

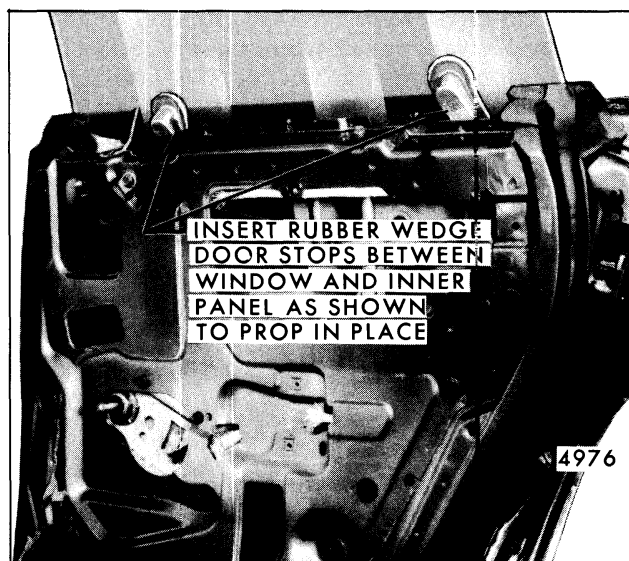


Fig. 5-140-Use of Rubber Door Stop Wedges to Prop Window in Place

2. Remove door window as previously described.
3. Remove (4) regulator attaching bolts ("11", Fig. 5-112), then disengage regulator lift arm from sash plate guide cam assembly.
4. Remove upper and lower guide tube assembly attaching screws ("8 and 9", Fig. 5-112), then remove the guide tube and lower sash guide plate assembly from door.
5. Disconnect body wire harness from window regulator at regulator motor, and remove regulator from door, lift arm first.
6. To install, reverse removal procedure. Torque upper and lower guide tube assembly attaching screws to 60 to 90 inch pounds. Torque regulator attaching bolts and lower sash plate assembly to glass attaching nuts to 72 inch pounds.

## **REAR DOOR WINDOW REGULATOR - Manual and Electric - "B" Closed Styles**

### **Removal and Installation - Refer to Figure 5-114**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Lower window to a three-quarter-down position, remove lower sash channel cam to glass attaching stud nuts. While supporting glass, disengage cam from rollers on regulator lift and balance arms and remove cam.

**NOTE:** Raise window to full-up position and secure in place with pieces of cloth-backed body tape applied over door upper frame.

3. Remove inner panel cam attaching bolts.
4. Loosen window regulator attaching bolts and remove window regulator through access hole.
5. To install, reverse removal procedure. Torque all previously removed attachment components, except inner panel cam attaching bolts, to 72 inch pounds. Torque inner panel cam attachments to 60 to 90 inch pounds.

## **REAR DOOR WINDOW REGULATOR - Manual and Electric - "B and C" Four-Door Hardtop Styles, Except 6CB69 Style**

### **Removal and Installation - Refer to Figure 5-116**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector, as previously described.

2. Remove center guide cam as subsequently described and prop glass in a full-up position by placing rubber door wedge stops between glass and inner panel (at belt) at the front and rear of glass (Fig. 5-140).
3. Remove window regulator attaching bolts ("7", Fig. 5-116), then slide regulator lift arm roller out of lower sash channel cam and remove regulator through large access hole.
4. To install, reverse removal procedure. Torque center guide cam attachments to 60 to 90 inch pounds. Torque window regulator attaching bolts to 72 inch pounds.

## **REAR DOOR WINDOW REGULATOR - 6BC69 Style**

### **Removal and Installation - Refer to Figure 5-118**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Remove window regulator attaching bolts. Disengage regulator lift arm roller from lower sash channel cam and prop window in a full-up position (Fig. 5-140). Rotate regulator assembly clock-wise so that motor portion of regulator assembly comes out first.
3. To install, reverse removal procedure. Torque window regulator attaching bolts to 72 inch pounds.

## **REAR DOOR WINDOW REGULATOR ELECTRIC MOTOR - All Styles**

### **Removal and Installation**

If it is necessary to remove the electric motor from the regulator, refer to "Front and Rear Door" section for the proper procedure. The tension on the lift arm assist spring can cause serious injury if the motor is removed without use of the cautionary measures described in the procedure.

## **REAR DOOR WINDOW REGULATOR - "X-69" Style**

### **Removal and Installation**

1. Remove door trim assembly and inner panel water deflector.
2. Remove inside locking rod to lock connecting link bolt ("6", Fig. 5-120) and disconnect locking rod at lock.

3. Operate window to full-up position and secure in place with pieces of cloth-backed body tape applied over door frame.
4. Remove regulator attaching bolts ("5", Fig. 5-120). Slide regulator lift arm roller out of lower sash channel cam and remove regulator through large access hole.
5. To install, reverse removal procedure. Torque previously removed components to 72 inch pounds.

### **REAR DOOR WINDOW CENTER GUIDE CAM - "B and C" Four-Door Hardtop Styles, Except 6CB69 Style**

#### **Removal and Installation**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Prop window in full-up position (Fig. 5-140), remove center guide cam upper and lower attaching bolts ("4 and 6", Fig. 5-116).
3. Pull guide downward to disengage from window lower sash guide plate roller assembly. Remove guide through access hole.
4. To install, reverse removal procedure. Torque guide cam upper and lower attaching bolts to 60 to 90 inch pounds. Adjust guide for proper window operation as described in door window adjustment procedure.

### **REAR DOOR WINDOW GUIDE TUBE - 6CB69 and "A-29,35" Styles**

#### **Removal and Installation**

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.
2. Support window in full up position, using rubber door wedge stops between glass and inner panel (at belt) at front and rear of glass (Fig. 5-140).
3. Mark location, and remove lower sash upper and lower guide attachments "5 and 6", Figure 5-112 for "A" styles, "2 and 4" of Figure 5-118 for 6CB69 style.

4. Remove upper and lower guide tube attaching bolts "8 and 9", Figure 5-112 for "A" styles, "1", Figure 5-118 for 6CB69 style. Lower guide tube into door and remove through access hole, top out first.

5. To install, reverse removal procedure. Align all removed components to their previously marked positions. Torque attaching bolts to 60 to 90 inch pounds, and torque attaching nuts to 72 inch pounds.

### **REAR DOOR WINDOW LOWER SASH UPPER AND/OR LOWER GUIDE ASSEMBLY - 6CB69 and "A-29,35" Styles**

#### **Removal and Installation**

1. Remove upper portion of door trim assembly (refer to Index of Door Section for door trim assembly removal).
2. For removal of lower sash upper and/or lower guide assembly, mark location of attachments, and remove attachments "2" and/or "4", Fig. 5-118 for 6CB69, "5" and/or "6", Fig. 5-112 for "A-29, 35" styles. Then remove guide tube assembly, as previously described, to completely remove lower sash assembly.
3. To install, reverse removal procedure. Align components to their pre-marked location to insure proper glass alignment. Torque attaching nuts to 72 inch pounds, attaching bolts to 60 to 90 inch pounds.

### **REAR DOOR WINDOW GLASS RUN CHANNEL - "B and X" Closed Styles**

#### **Removal and Installation**

1. Remove door window as previously described.
2. With finger pressure, squeeze run channel together and gently pull run channel out of rear door upper frame.
3. To install, reverse removal procedure.

## SECTION 6

### REAR QUARTER

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### QUARTER TRIM

#### REAR QUARTER ARM REST - "B,C and E" Two-Door Styles and "B and E" Convertible Styles

Certain two-door hardtop and convertible styles are equipped with "Floor-Mounted Type" arm rests. The arm rests extend from the arm position to the floor, and from the body lock pillar to the rear seat back panel (Fig. 6-1).

##### Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Remove arm rest front and lower attaching screws.

3. On "B, C and E" styles, remove attaching screw at upper rear of arm rest (Fig. 6-1).
4. Where present, detach electrical wiring and remove trim assembly (View "B", Fig. 6-2).
5. To install, connect electrical wiring and reverse removal operations.

#### REAR QUARTER TRIM ASSEMBLY - All Two-Door Styles, Except "A, F and X" Styles

##### Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Where present, remove quarter window regulator handle (see Fig. 6-5).

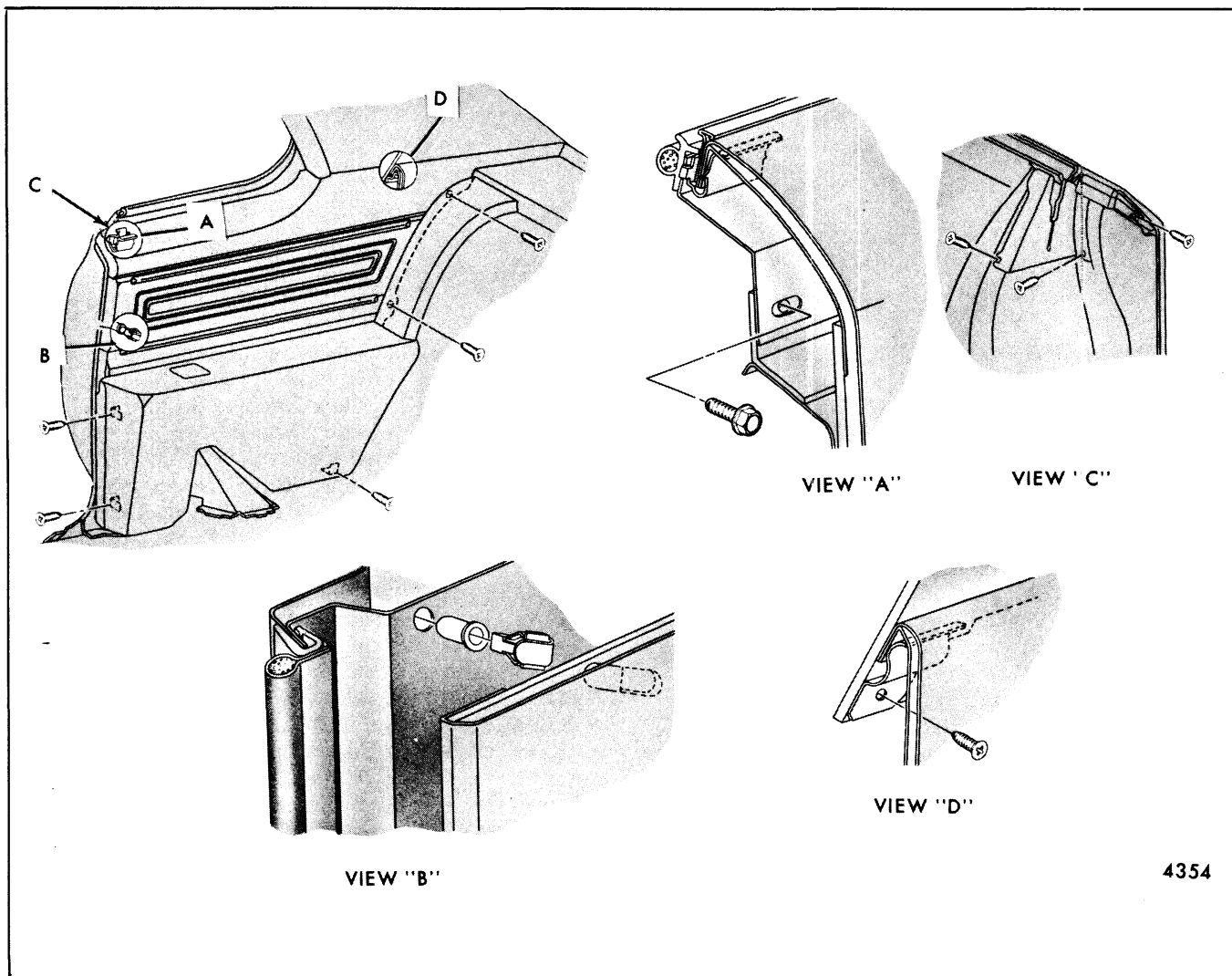


Fig. 6-1-Quarter Trim Assembly Attachment - Two-Door Hardtop Styles ("B" Style Shown)

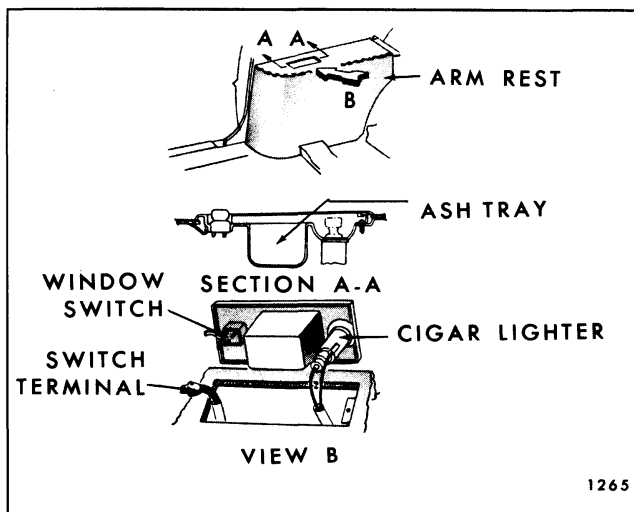


Fig. 6-2-Quarter Arm Rest Ash Tray and Electric Switch Plate (Hardtop Styles)

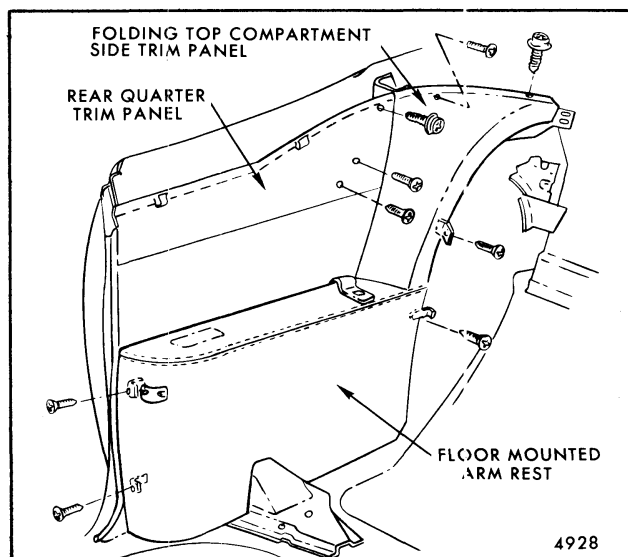


Fig. 6-3-Quarter Trim Assembly Attachment - Convertible Styles



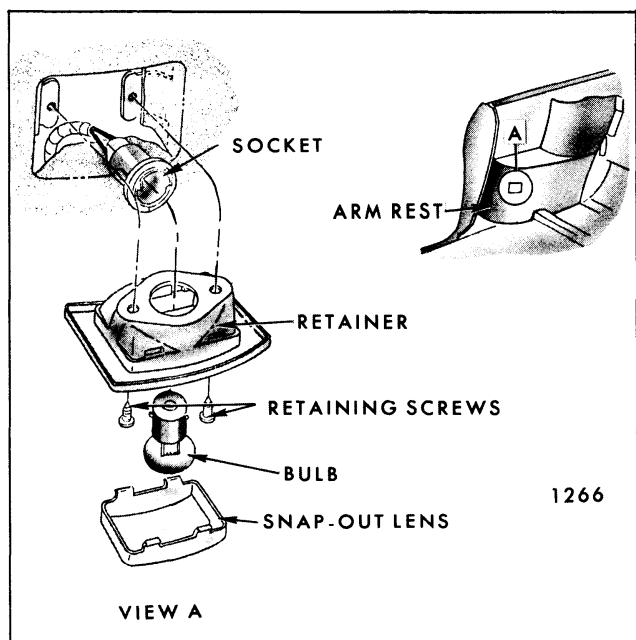


Fig. 6-4-Quarter Arm Rest Courtesy Lamp - Convertible Styles

3. Remove quarter trim and, where present, quarter filler panel.
4. Where present, remove attaching screw(s) from front and/or rear of quarter trim assembly (Figs. 6-1, 6-7 and 6-8).
5. Detach quarter trim by lifting assembly off hangar retention.
6. Where present, detach electrical wiring and remove trim assembly.
7. To install, connect electrical wiring and reverse removal operations.

### REAR QUARTER TRIM PANEL - "A, F and X" Styles

The rear quarter trim panel consist of a one-piece plastic panel with an integral arm rest.

#### Removal and Installation

1. Remove rear seat back and applicable rear seat cushion.
2. Remove rear quarter upper trim.
3. On "F" styles remove attaching screws from lower front (View "C", Fig. 6-6) and upper rear (View "D", Fig. 6-6) of trim panel.

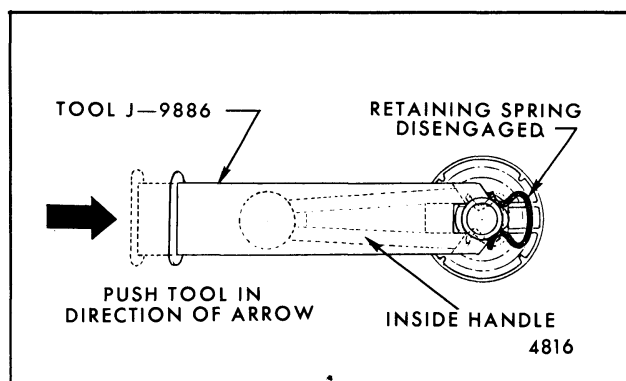


Fig. 6-5-Regulator Handle Removal

4. On "A" styles, remove three (3) attaching screws securing panel assembly to brackets (Fig. 6-7).
5. On "X" styles remove attaching screw and disengage two (2) tabs at upper rear of quarter trim panel (see Fig. 6-8).
6. Remove door opening sill plate. Then, slide trim panel forward and remove quarter trim panel.
7. To install, reverse removal operations.

### REAR QUARTER TRIM FINISHING PANEL - All Four-Door and "A-80" Styles

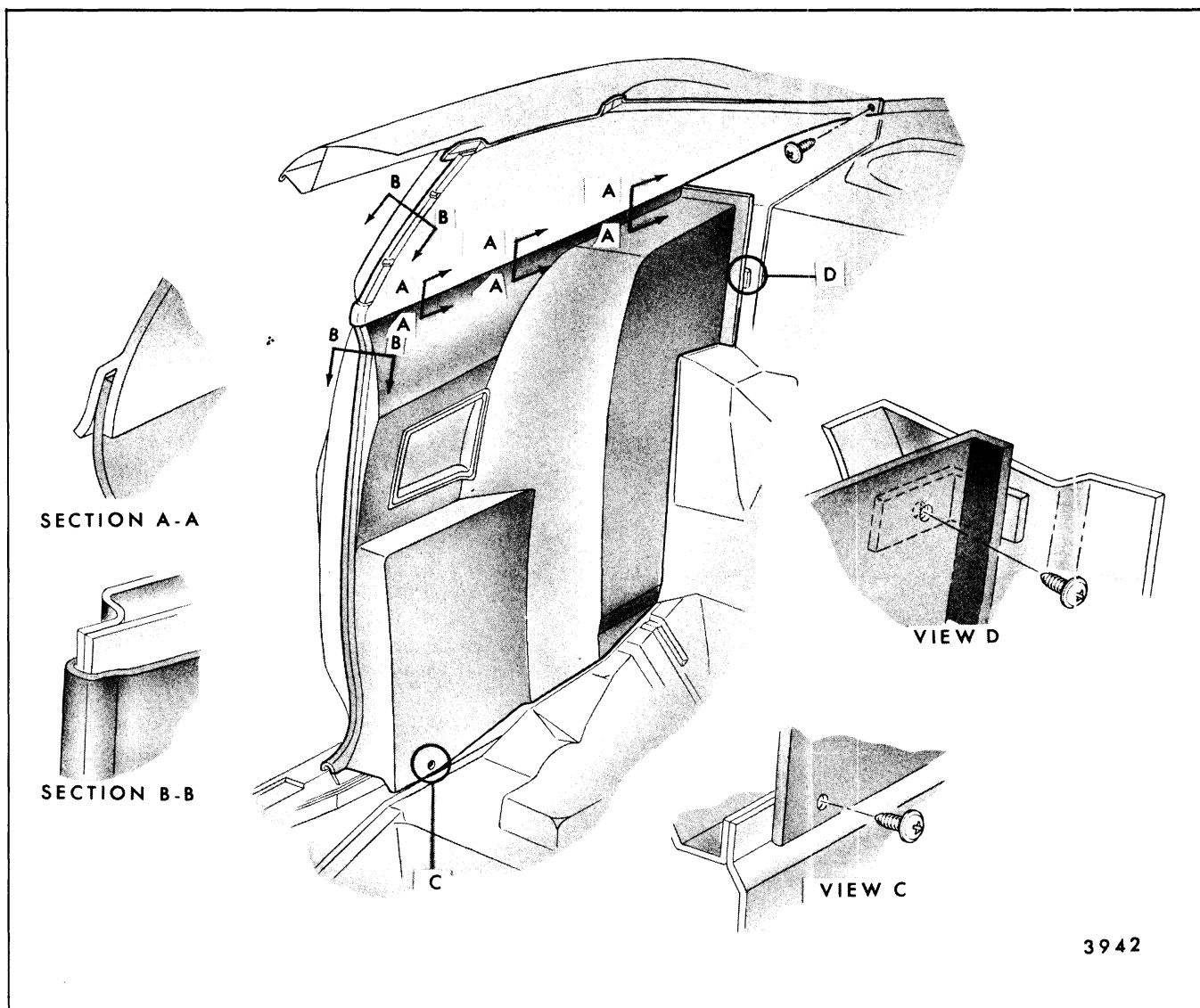
#### Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. On "A, B and X" styles, remove attaching screws from trim panel (Fig. 6-9) and remove trim panel.
3. On "C" styles, insert tool J-9886 or equivalent at each clip location and pry retaining clip from plastic retaining plugs (View "B", Fig. 6-10) and remove trim panel.
4. To install, reverse removal operations.

### REAR QUARTER UPPER TRIM - (Above Belt) - All Styles

#### Removal and Installation

1. On styles so equipped, detach molding or finishing lace from side of back window opening and along side roof rail adjacent to quarter upper trim assembly.



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Fig. 6-6-Rear Quarter Trim Attachment - "F" Styles

2. Remove attaching screw(s) or, if cemented, carefully break cement bond between upper trim and retainer along back window (Figs. 6-11 and 6-12).
3. On styles equipped with optional rear seat shoulder harness, remove anchor bolts securing harness at quarter upper trim.
4. On styles equipped with courtesy lamps in quarter upper trim remove as follows:
  - a. Insert a flat-bladed screwdriver or similar tool between courtesy lamp lens and lamp base. Press outboard to disengage lens retaining tabs from base.
  - b. Remove bulb from terminal clips.
  - c. Remove two (2) lamp base attaching screws.
  - d. To disengage wire harness from lamp base, grasp terminal clip with pliers and push clips through back of base.
5. With long flat-bladed tool, carefully locate and unfasten quarter upper trim two-part multiple-peg fastener (View "A", Fig. 6-11) and remove trim.

**NOTE:** Part 1 of fastener, as shown in Figure 6-11, secures to quarter inner panel. Part 2 of fastener (Fig. 6-11) is stapled to foundation of quarter upper trim. For best results during removal, confine prying operations between the fasteners.

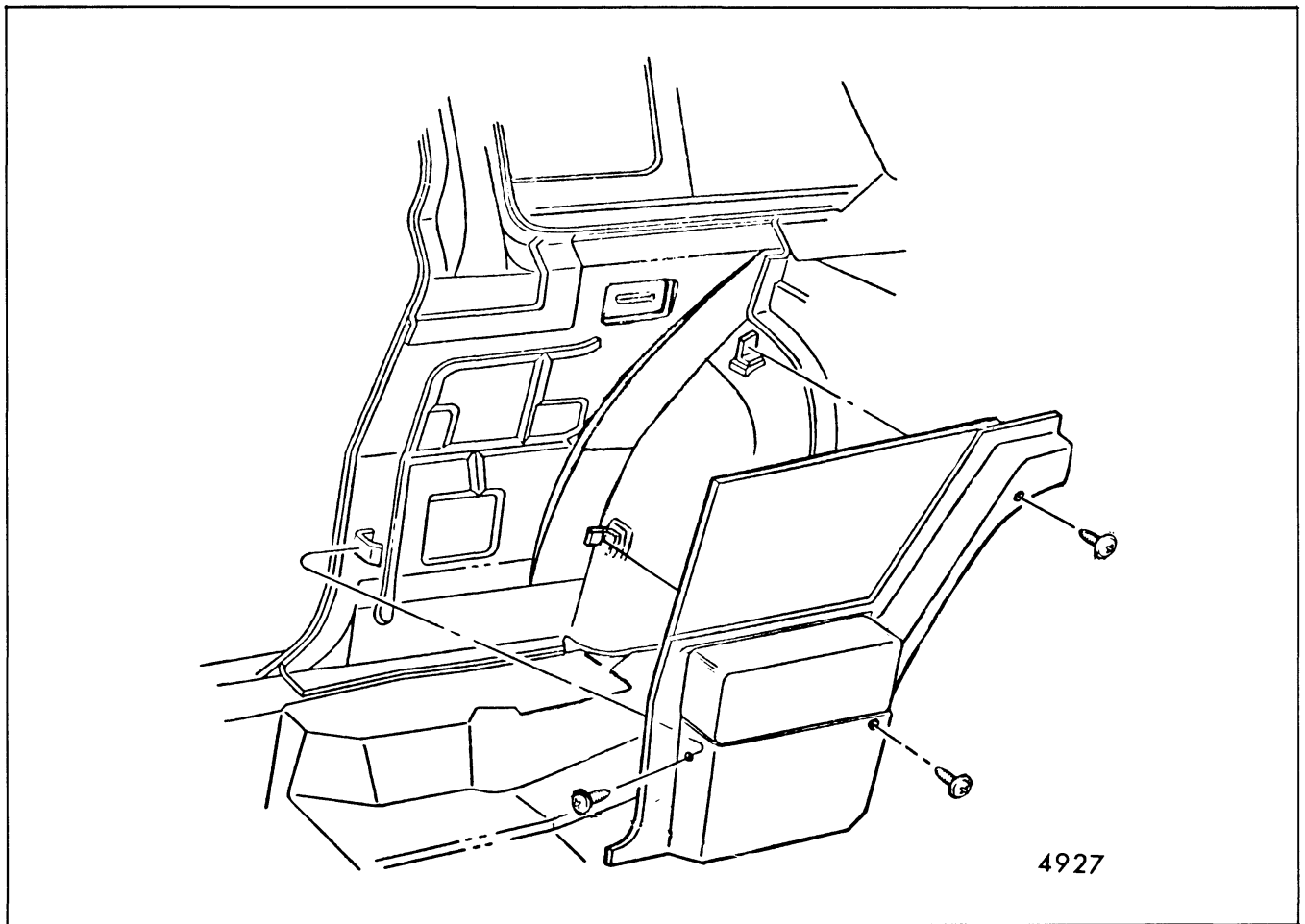


Fig. 6-7-Quarter Trim Assembly Attachment - "A" Styles

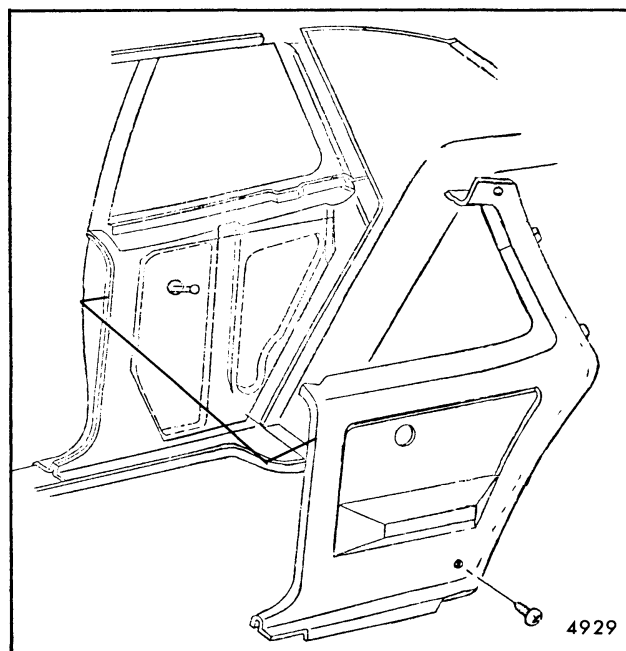


Fig. 6-8-Quarter Trim Assembly Attachment - "X" Styles

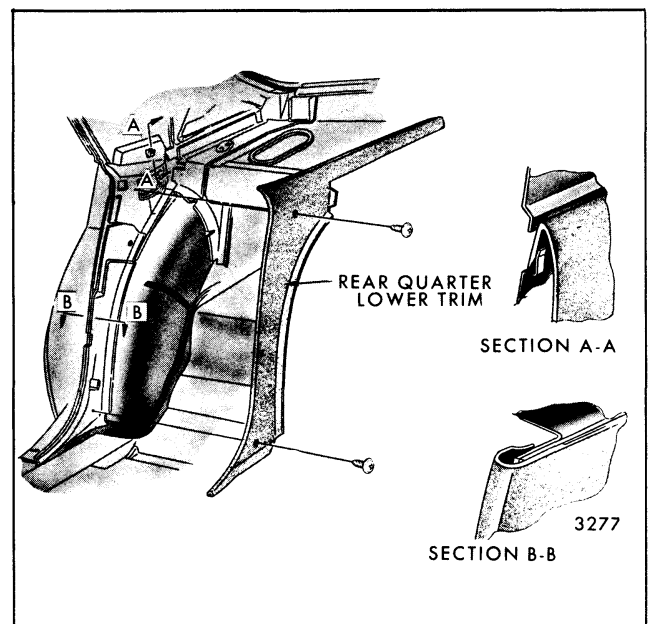


Fig. 6-9-Quarter Trim Assembly Attachment - "A, B and X" Four-Door and "A-80" Styles

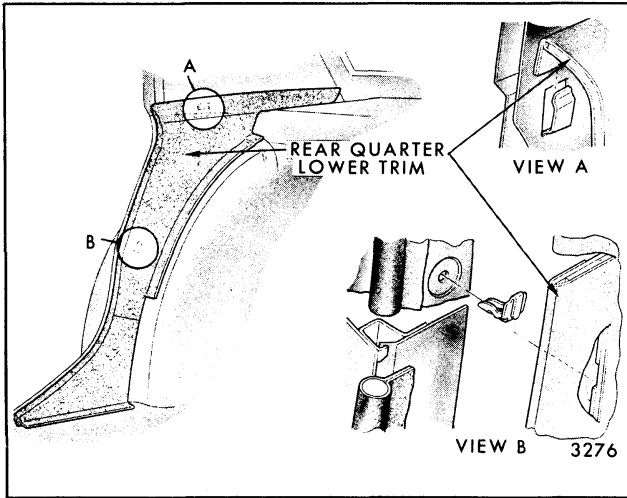


Fig. 6-10-Quarter Trim Assembly Attachment - "C"  
Four-Door Styles

6. To install trim assembly, feed courtesy lamp wire through trim panel. Also, position trim assembly at lower retaining clip ("D", Fig. 6-11) and along front and rear edges. Then, secure fasteners with moderate hand pressure. Reverse balance of removal operations. When necessary, use non-staining vinyl trim adhesive to cement trim at back window retainer.

### BODY LOCK PILLAR FINISH MOLDING OR WINDLACE ASSEMBLY - "A, B and C" Coupe Styles

#### Removal and Installation

1. On "B and C" styles remove rear quarter trim assembly and detach door sill plate.
2. Pull inboard on the windlace to disengage from the lock pillar (Fig. 6-13).
3. On certain "A" styles a body lock pillar finish molding is installed over the front edges of the upper and lower quarter trim panels. To disassemble remove four (4) attaching screws and pull molding forward.
4. To install, reverse removal operations.

### REAR QUARTER TRIM FRONT FINISHING PANEL - "B" Station Wagon Styles

#### Removal and Installation

1. Detach quarter window lower garnish molding.

2. Detach side roof rail finishing molding and remove rear body lock pillar upper finishing panel.
3. Detach door sill plate.
4. On all "B" styles with split second seat, remove seat back lock striker and bumper assembly from wheelhouse.
5. Remove attaching screws from finishing panel and remove panel (Fig. 6-14).
6. To install, position finishing panel to rear lock pillar and reverse removal operations.

### REAR QUARTER WHEELHOUSE TRIM COVER PANEL - "X-17" STYLES

#### Removal and Installation

1. Loosen side roof rail garnish molding.
  2. Remove back body opening garnish molding.
  3. Remove rear seat cushion and seat back lock striker.
  4. Detach rear end finishing panel.
  5. Disengage top of trim panel from weld-on clips at underside of gutter (Fig. 6-15 View B-B) then, lift upward to release panel from clips at bottom (Fig. 6-15, View A-A).
  6. Disconnect electrical wiring from trim panel components if present.
  7. Carefully spread panel apart and slide over rear compartment counterbalance support.
- NOTE:** If replacing trim panel and new panel is not separated at counterbalance support hole, cut new panel at location shown in Figure 6-15.
8. To install, reverse removal operations.

### REAR QUARTER WHEELHOUSE TRIM COVER PANEL - (Right Side) - "A and B" Station Wagon Styles

#### Removal and Installation

1. Remove quarter window lower and front garnish moldings.
2. On "B" styles, remove rear quarter trim front finishing panel.

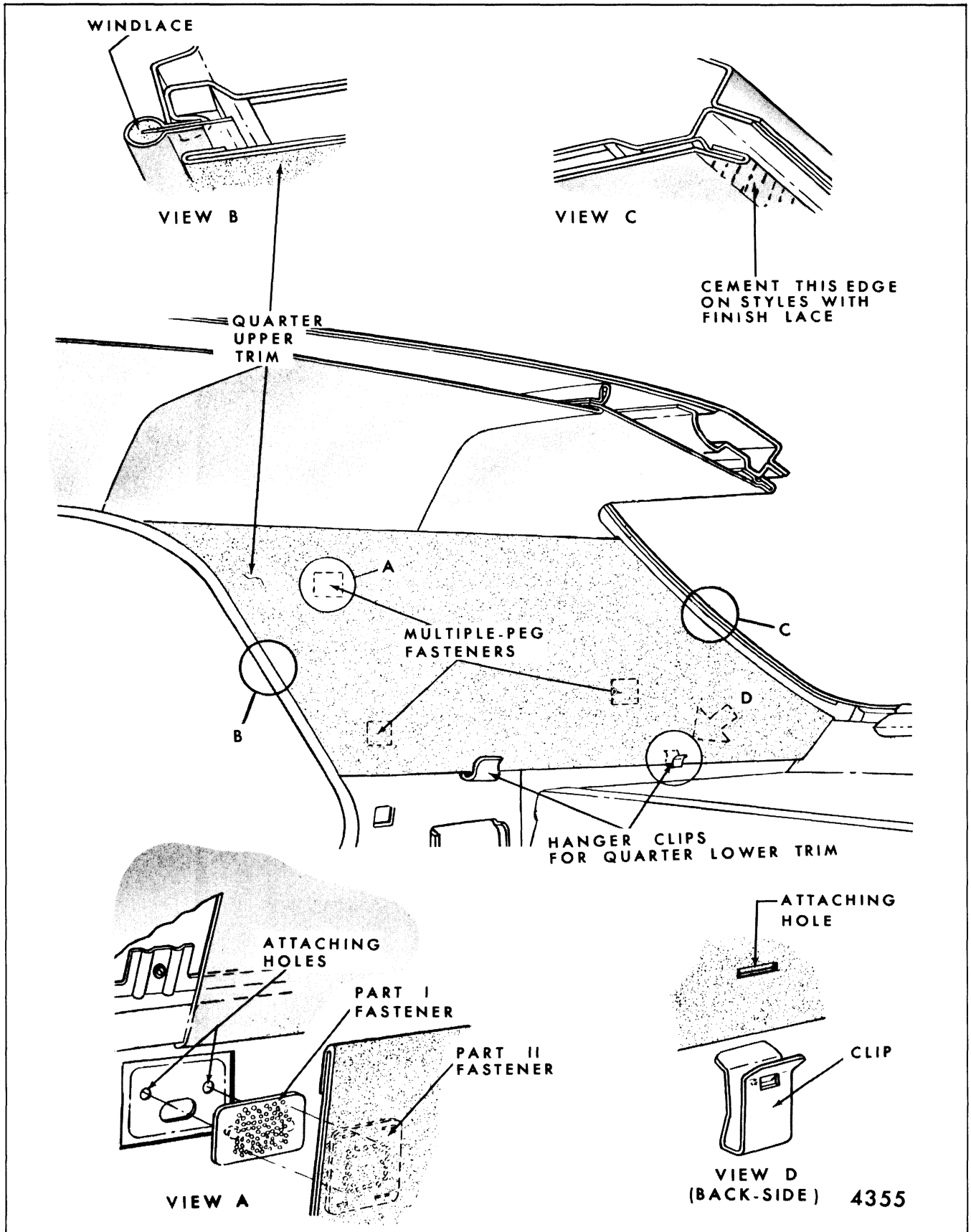


Fig. 6-11-Quarter Upper Trim Attachment - Typical Installation

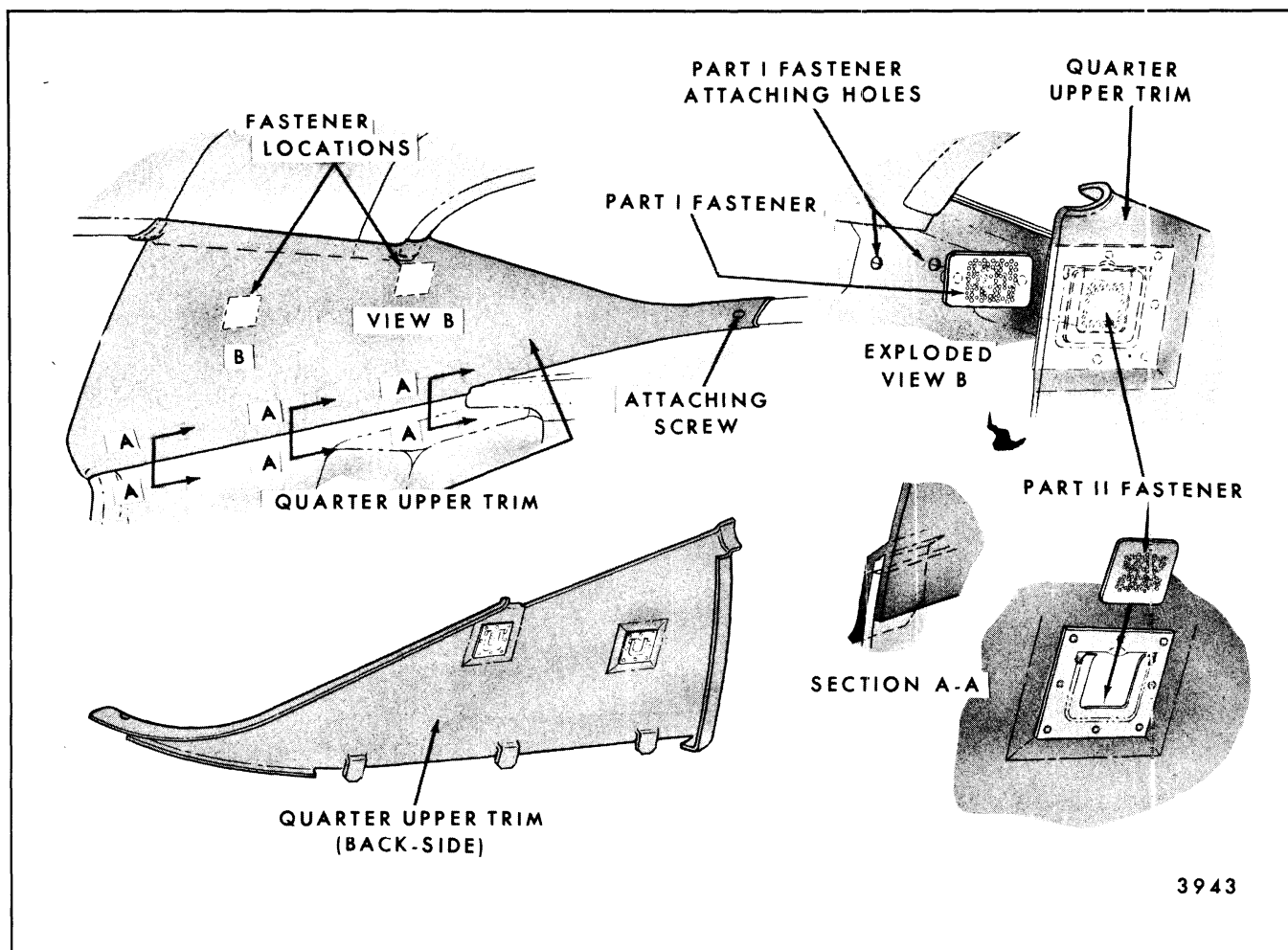


Fig. 6-12-Quarter Upper Trim Attachment - Typical Installation

3. Remove spare tire cover panel.
4. Remove second folding seat back lock striker and bumper assembly from wheelhouse (Fig. 6-16).
5. Remove attaching screws from perimeter of trim cover panel and remove panel.
6. On "A" styles disengage edge of trim cover panel from supports and move forward to release from lock pillar flange (Fig. 6-17).
7. To install, reverse removal operations.

### SPARE TIRE COVER PANEL - "A and B" Station Wagon Styles

#### Removal and Installation

On "B" styles the spare tire cover panel is retained at the beltline by an overlapping quarter window

garnish molding. The cover panel is secured at the bottom by a striker and folding (catch-type) lock handle (Fig. 6-16). To remove cover, open lock handle, swing bottom of cover outward to release at beltline and remove. To install, reverse removal procedure.

On "A" styles the spare tire cover is retained by two (2) tabs that engage the front flange of the wheelhouse panel when placed in position. The cover panel is also secured at the top by snap supports and along the back when inserted between the back body pillar molding and clip (Fig. 6-17). To remove cover open catch and disengage panel by pulling inboard at rear and top. Then move panel rearward to separate from wheelhouse cover tabs Figure 6-17.

**NOTE:** On styles with tail gate window defogger, disconnect hose from defogger outlet grille to complete removal.

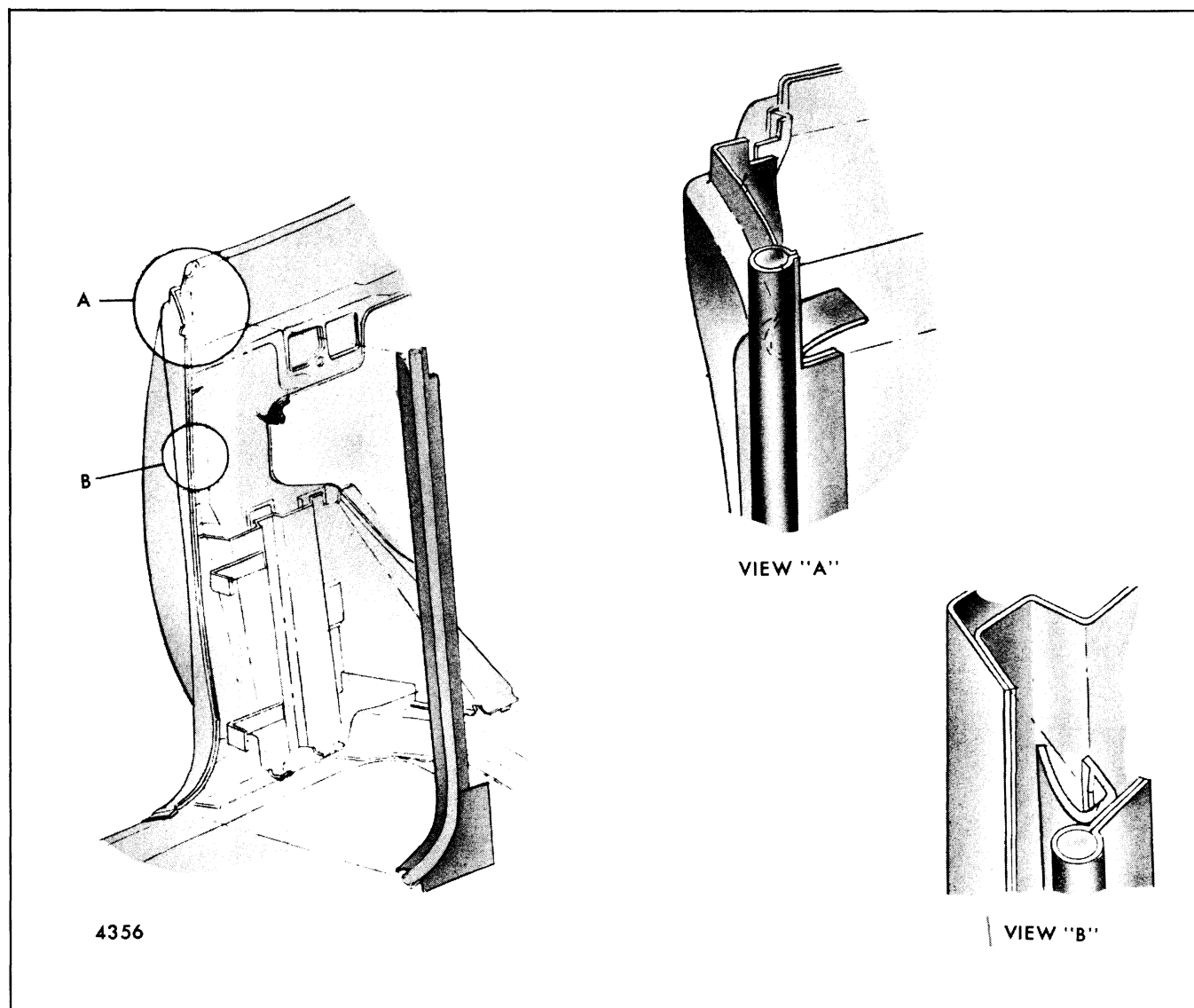


Fig. 6-13-Body Lock Pillar Windlace - "B and C" Styles

## REAR QUARTER WHEELHOUSE TRIM COVER PANEL - (Left Side) - "B" Station Wagon Styles

### Removal and Installation

1. Remove quarter window lower and front garnish molding.
2. On styles with optional split seat, remove seat back bumper or seat back lock striker (Fig. 6-18).
3. On "B" styles remove rear quarter trim front finishing panel.
4. Remove attaching screws from perimeter of trim cover panel as shown in Figure 6-18.
5. Detach electrical wiring from cover panel components and remove cover panel.
6. To install, connect electrical wiring and reverse removal operations.

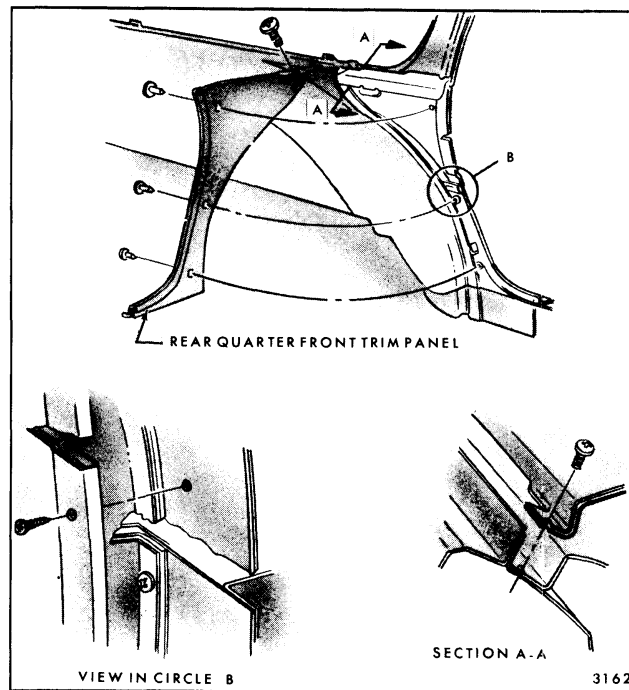


Fig. 6-14-Quarter Front Trim Finishing Panel - "B" Station Wagon Styles

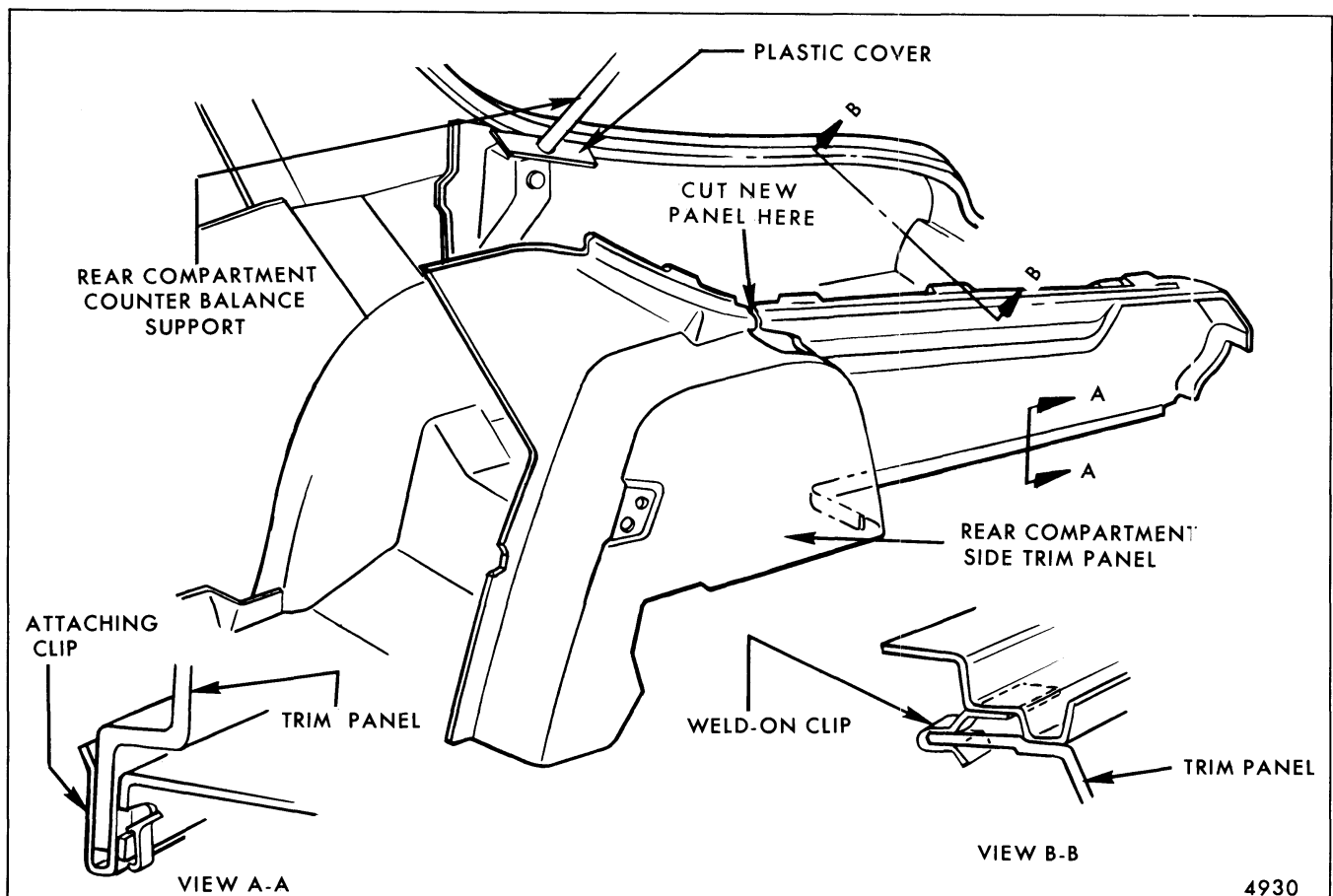


Fig. 6-15-Rear Quarter Wheelhouse Trim Cover Panel - "X-17" Styles



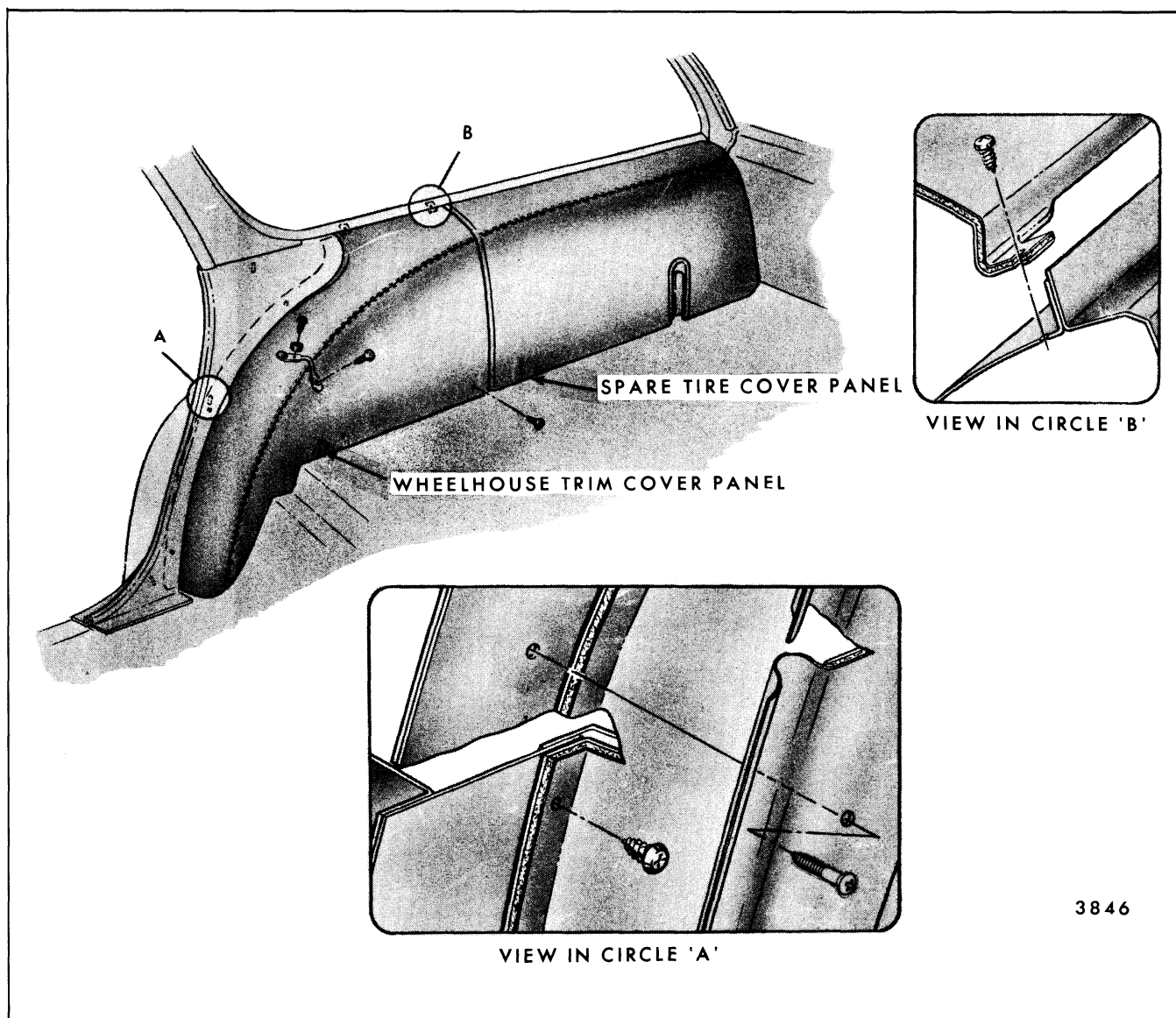


Fig. 6-16-Wheelhouse Trim Cover Panel (Right Side) - "B" Station Wagon Styles

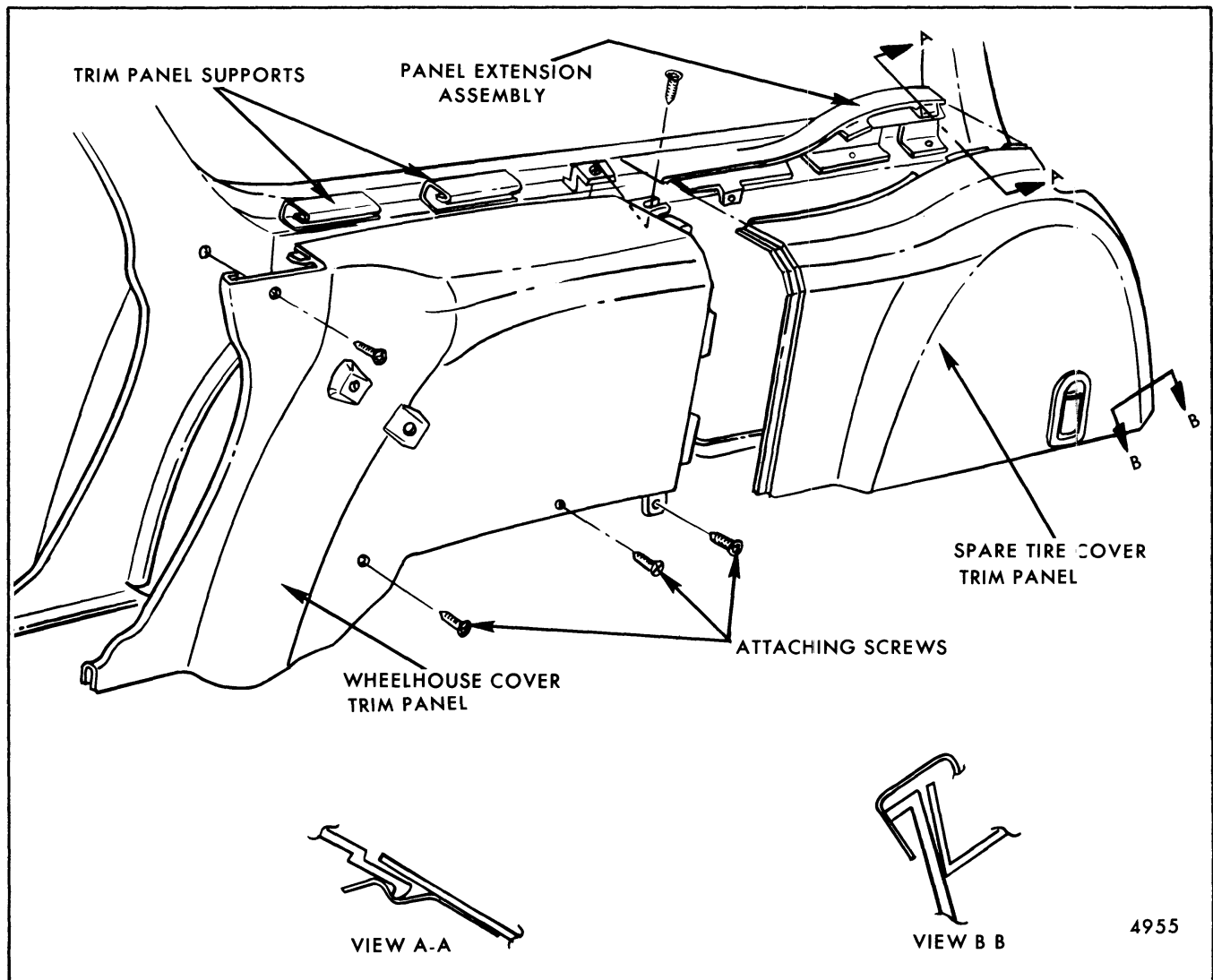


Fig. 6-17-Wheelhouse and Spare Tire Trim Cover Panel - "A" Station Wagon Styles

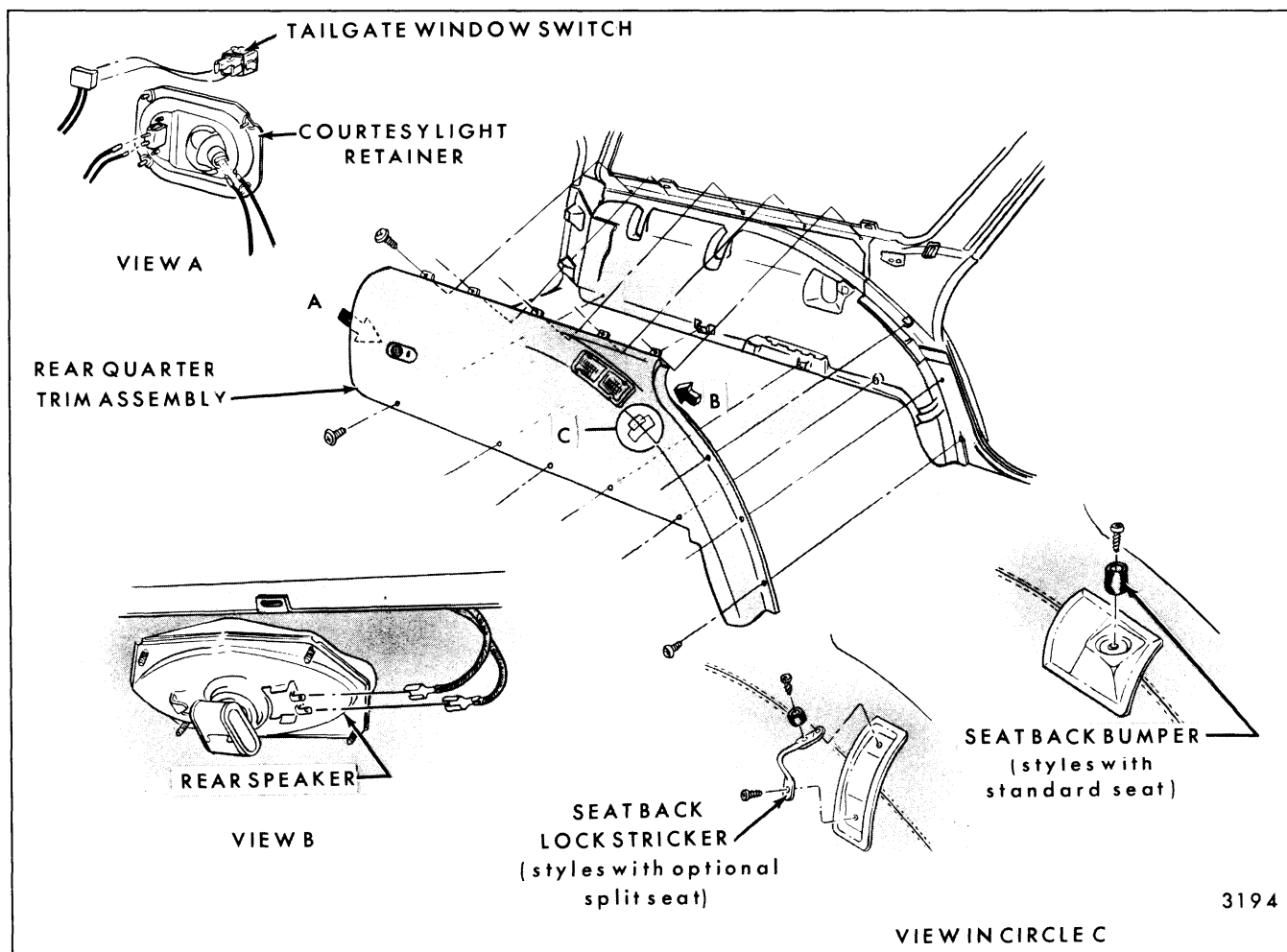


Fig. 6-18-Wheelhouse Trim Cover Panel (Left Side) - "B" Station Wagon Styles

## REAR SPEAKERS

### REAR SPEAKERS - "35, 45 and X-17" Styles

#### Description

Rear speakers on "35, 45 and X-17" styles are installed to the inside surface of the rear quarter trim assembly (Fig. 6-19).

#### Removal and Installation

1. Remove rear quarter trim assembly as previously described.
2. Disconnect speaker wire from body harness.
3. Remove four (4) speaker assembly to grille attaching nuts.
4. Remove grille from rear quarter trim assembly by lifting upward or outward.
5. To install, reverse removal procedure.

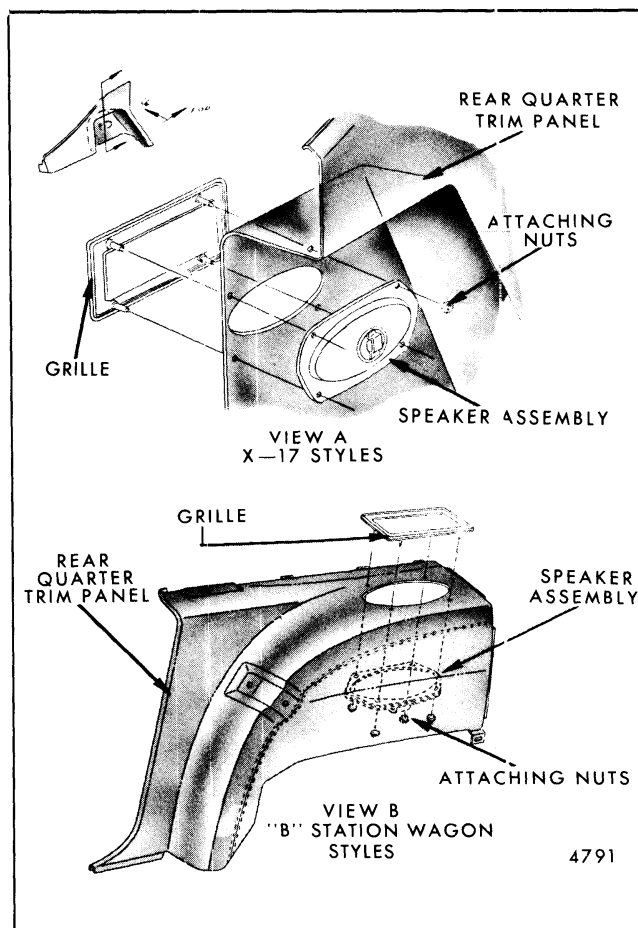


Fig. 6-19-Rear Speaker Installation - "35, 45 and X-17" Styles

## BACK WINDOW DEFOGGER (BLOWER TYPE) ALL "B-35-45 and X-17" STYLES

#### DESCRIPTION

The back window defogger on "B" station wagon and "X-17" styles is installed to the quarter trim assembly (left side only).

Air is drawn into the motor assembly adaptor or duct at the intake grille and forced out through the outlet grille against the back window at the top or side of the quarter trim assembly (see Figs. 6-20 and 6-21).

#### Removal and Installation

1. Remove quarter trim assembly as previously described.
2. Disconnect motor wire from body harness.
3. On "X-17" styles remove four (4) attaching nuts from blower adaptor studs to separate blower assembly from adaptor. Then, remove two (2) attaching nuts from both intake and outlet grilles to complete disassembly (see Fig. 6-21).

On "B-35 and 45" styles remove four (4) attaching nuts to separate blower assembly from grille, cover panel, and screen (see Fig. 6-20).

4. To install, reverse removal procedure.

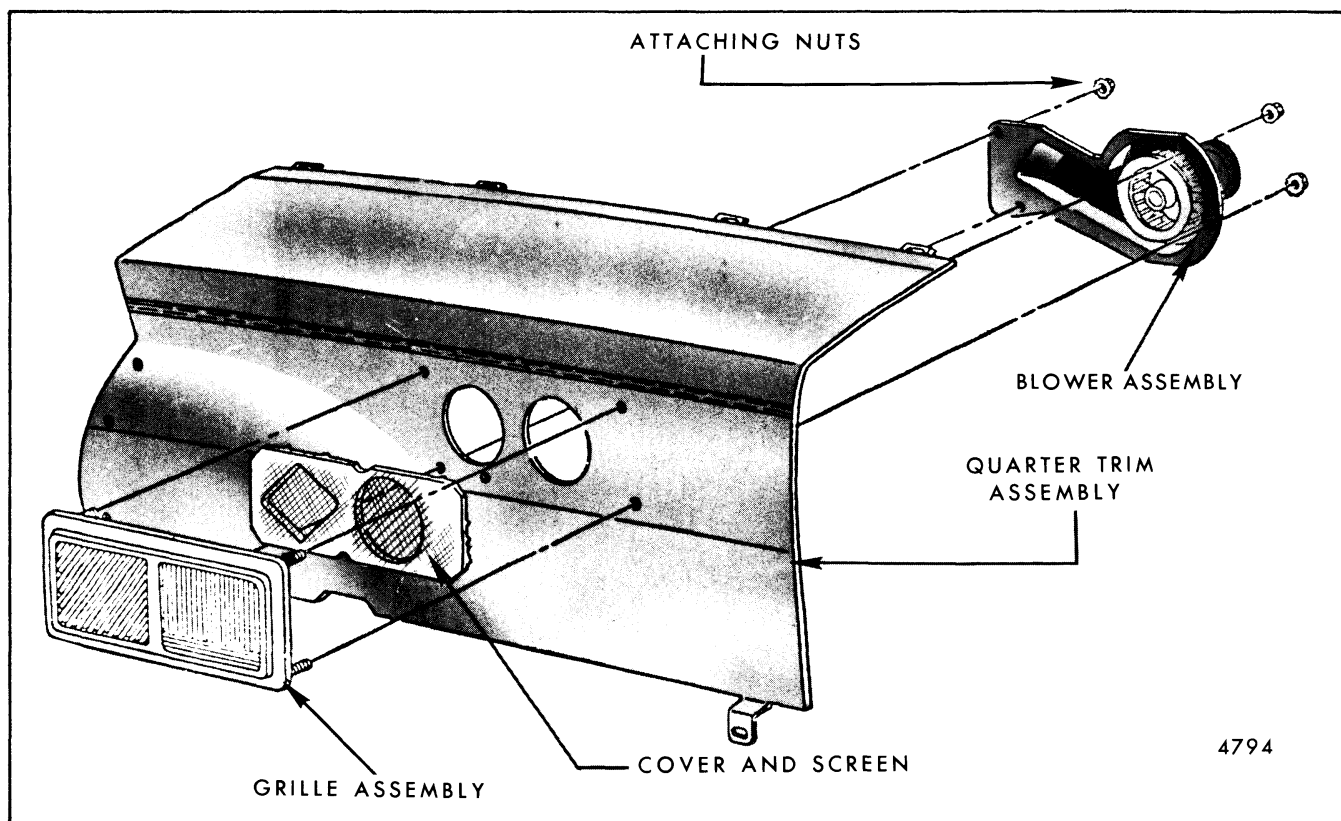


Fig. 6-20-Back Window Defogger - "B" Station Wagon Styles

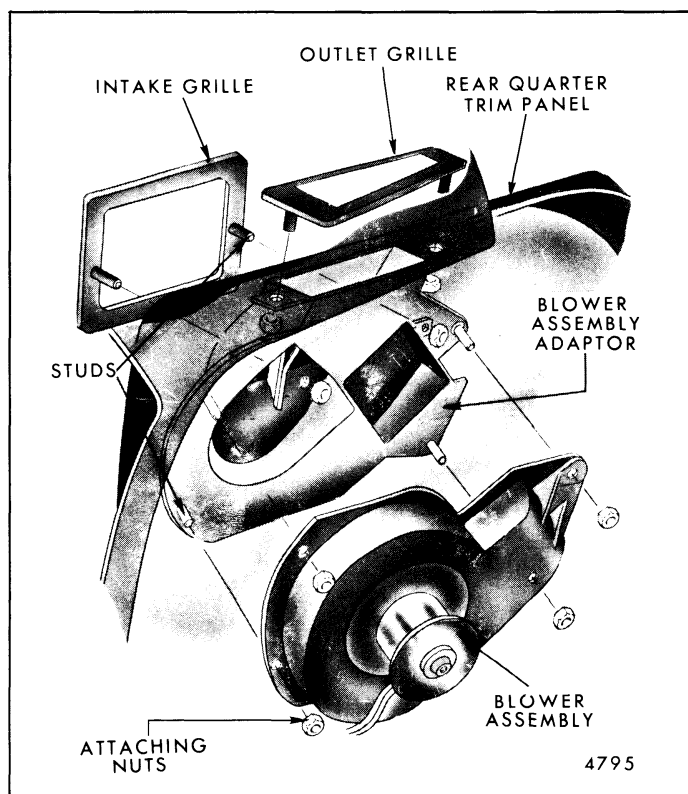


Fig. 6-21-Back Window Defogger - "X-17" Styles

## REAR QUARTER HARDWARE

### INTRODUCTION

This portion of the manual contain service operations that are necessary for removal, installation, adjustment and sealing of quarter assemblies and individual quarter hardware components. The procedures are arranged in the sequence that they would be performed when servicing a quarter.

To locate specific procedures, refer to the index at the beginning of this section. Body series or style references in the procedures are explained under "General Information" in Section 1 of this manual.

### REAR QUARTER INNER PANEL SEALING

#### Description and Installation

All rear quarter inner panels are either sealed with a water deflector, access hole cover, sealing plug (or grommet) or a combination of all three to prevent entry of water into the body. Service procedures for inner panel water deflectors are outlined in the "Front and Rear Door" section of this manual (see Index). Figure 6-22 is typical of all quarter water deflector installation.

Inner panel access hole covers are retained by screws to the quarter inner panel and sealed with a medium bodied body sealer. Whenever any seal has been disturbed, the area must be carefully resealed to prevent waterleaks. Body caulking compound or strip caulking is recommended if additional sealing is required. Figure 6-23 illustrates quarter inner panel sealing on styles which use individual seals at all hardware attaching locations.

### REAR QUARTER WINDOW INNER AND OUTER STRIP ASSEMBLIES - All "B-C-E" Coupe and Convertible Styles

#### Removal and Installation (Inner Sealing Strip)

Inner sealing strips are attached to a support and are removed as an assembly. The support and strip assembly can be removed from the body by removing a bolt at the front of the window guide upper support, and, depending on the style, two or three attaching screws at the rear.

#### Removal and Installation (Outer Sealing Strip)

1. Remove rear seat, quarter trim panel and water deflector.

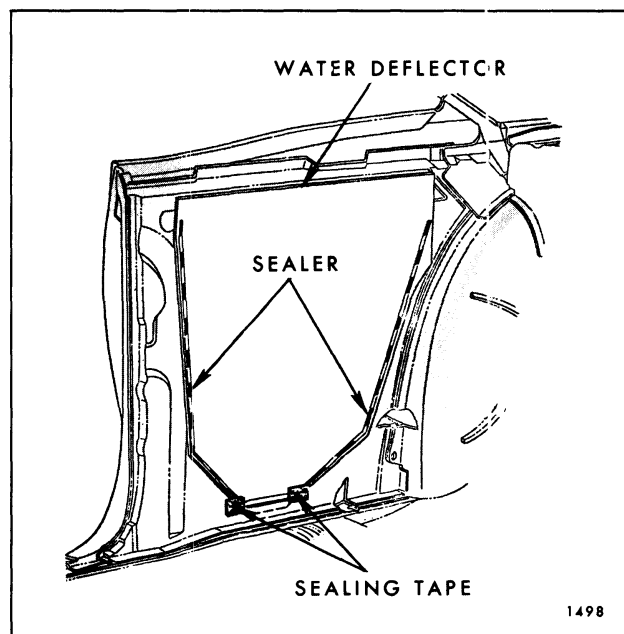


Fig. 6-22-Rear Quarter Inner Panel Sealing - Typical of Water Deflector Installation

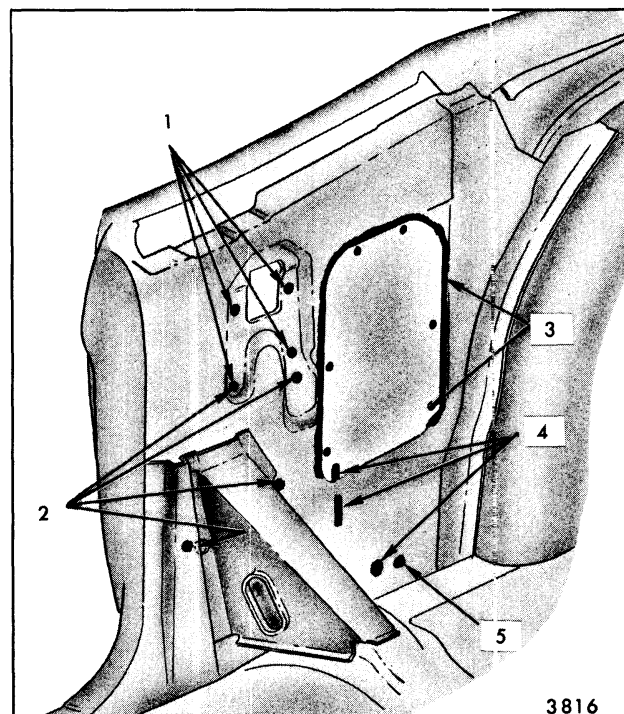


Fig. 6-23-Typical Rear Quarter Inner Panel Sealing - "67" Styles

- |  |   |
|--|---|
| 1. Manual Regulator Attaching Bolt Slots   | 4. Window Guide and Lower Stop Adjusting Stud Slots |
| 2. Electric Regulator Attaching Bolt Slots | 5. Electrical Harness Grommet                       |
| 3. Access Hole Covers                      |   |

2. Scribe bolt locations at upper and lower support to guide bolts.
3. Remove upper support to guide bolts ("1", Fig. 6-33 and 6-34) and lower support guide bolt ("6", Fig. 6-33 and 6-34). Lower glass and guide assembly into quarter panel to gain access to outer sealing strip attaching rivets.

4. Attaching rivets can be removed by drilling out the rivet with a 1/8 inch drill bit.

**CAUTION:** Using larger than 1/8 inch drill bit, would enlarge the attaching hole and prevent the use of rivets for installation. Substitution of screws for rivets could result in scratched glass.

5. To install, align holes in outer panel and sealing strip and attach with new rivets (Fig. 6-24).

## REAR QUARTER WINDOW - "X-27" Styles

### Adjustments

1. To obtain proper seating of glass in upper glass run channels, or proper contact between belt sealing strips and lower sash channel, loosen regulator attaching screws and adjust window as required.
2. To eliminate hard operating window assemblies due to binding glass run channels or a condition where window will not stay in rear run channel, loosen rear run channel attaching bolt and adjust run channel fore or aft as required.

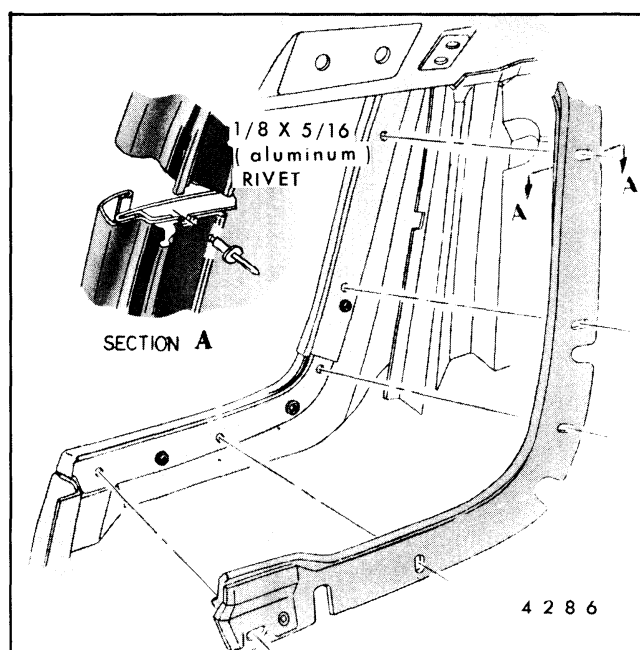


Fig. 6-24-Quarter Window Outer Sealing Strip Rivet Installation ("E-57" Style Shown, "B-C-E" Styles Similar)

## Removal and Installation

1. Remove rear quarter trim assembly and inner panel water deflector.
2. Operate quarter window to the position illustrated in Figure 6-25.

**NOTE:** Figures 6-25 and 6-26 are typical of rear quarters and identify the component parts of the rear quarter hardware by styles, their relationship and various attaching points.

3. While supporting glass, disengage clip retainer securing regulator lift arm to glass ("3", Fig. 6-26).
4. Manually lower glass until front and rear lower edges of glass are sufficiently free of their respective run channels. Then, rotate front edge of glass downward between rear quarter inner and outer panels and remove window, rear edge first, inboard of side roof rail.

5. To install, reverse removal procedure.

## REAR QUARTER WINDOW REAR RUN CHANNEL - All Closed Styles

### Removal and Installation

1. Remove rear quarter window as previously described.

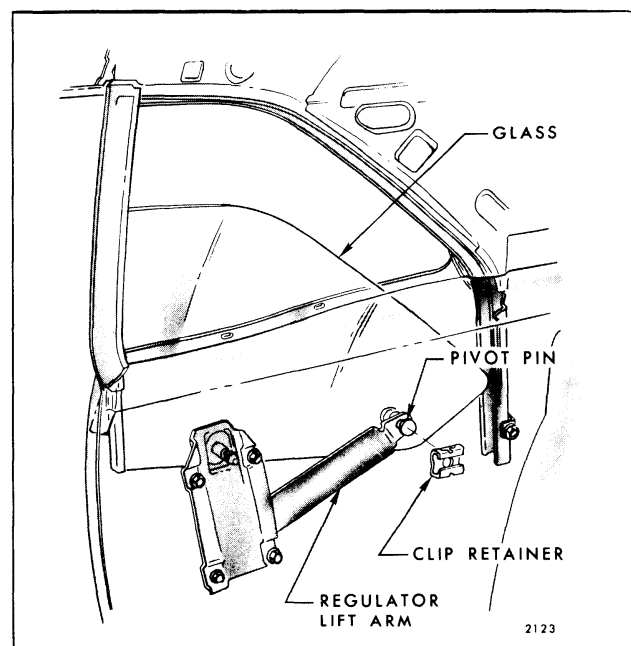
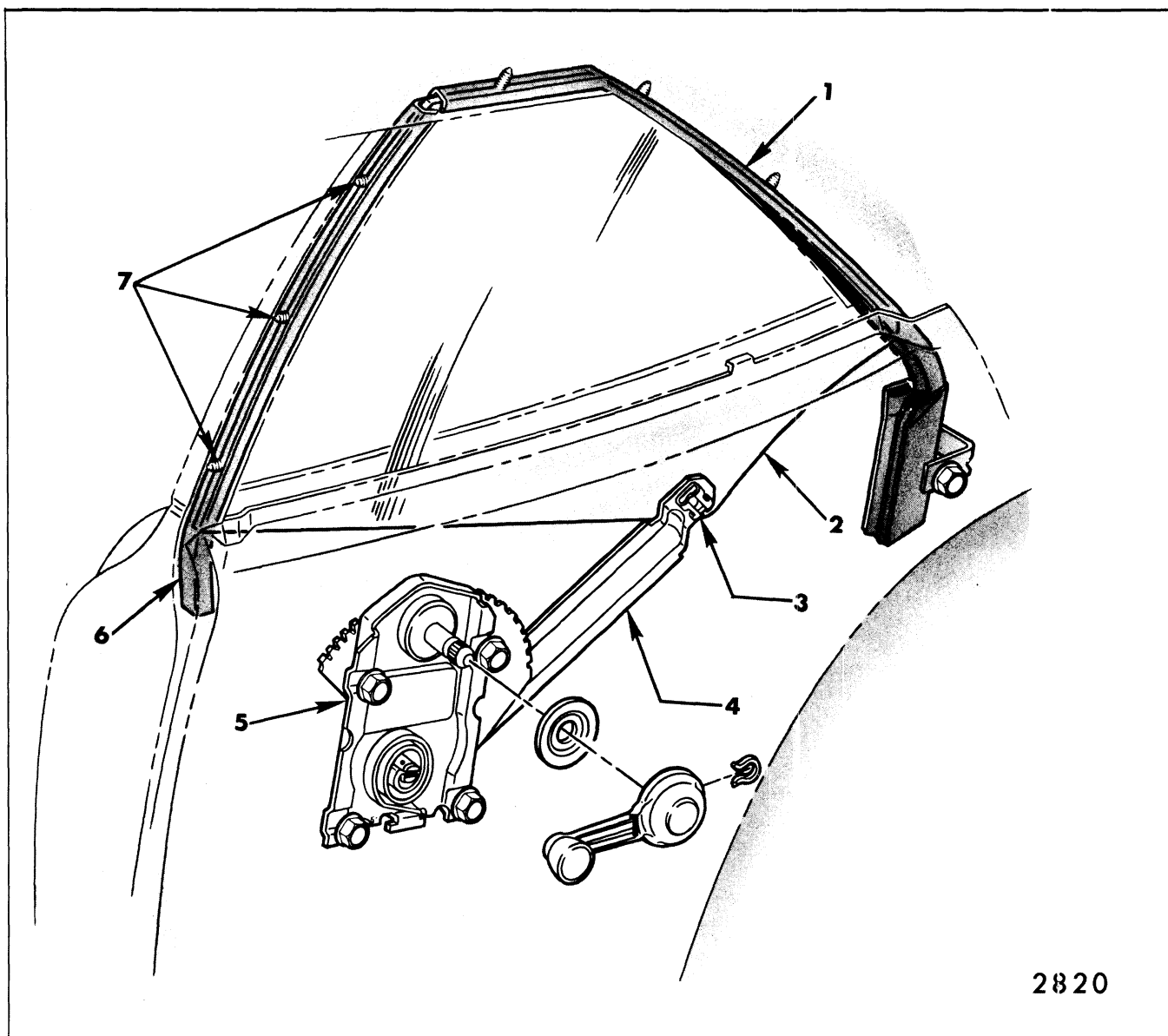


Fig. 6-25-Rear Quarter Window Attachment - Typical Closed Styles



2820

Fig. 6-26-Rear Quarter Hardware - "X-27" Styles

- |                           |                                       |
|---------------------------|---------------------------------------|
| 1. Rear Glass Run Channel | 5. Regulator Assembly                 |
| 2. Rear Window Glass      | 6. Front Glass Run Channel            |
| 3. Retainer and Pivot Pin | 7. Front Run Channel Retaining Screws |
| 4. Regulator Lift Arm     |                                       |

2. Remove run channel to inner panel attaching bolt (Fig. 6-27).
3. Remove screws securing run channel to side roof rail along length of run channel.
4. Using a flat-bladed tool, carefully pry run chan-

nel retaining clips (rosebud fasteners) from piercings in side roof rail.

**NOTE:** If difficulty is encountered disengaging run channel, inspect inside of channel for the presence of screws.



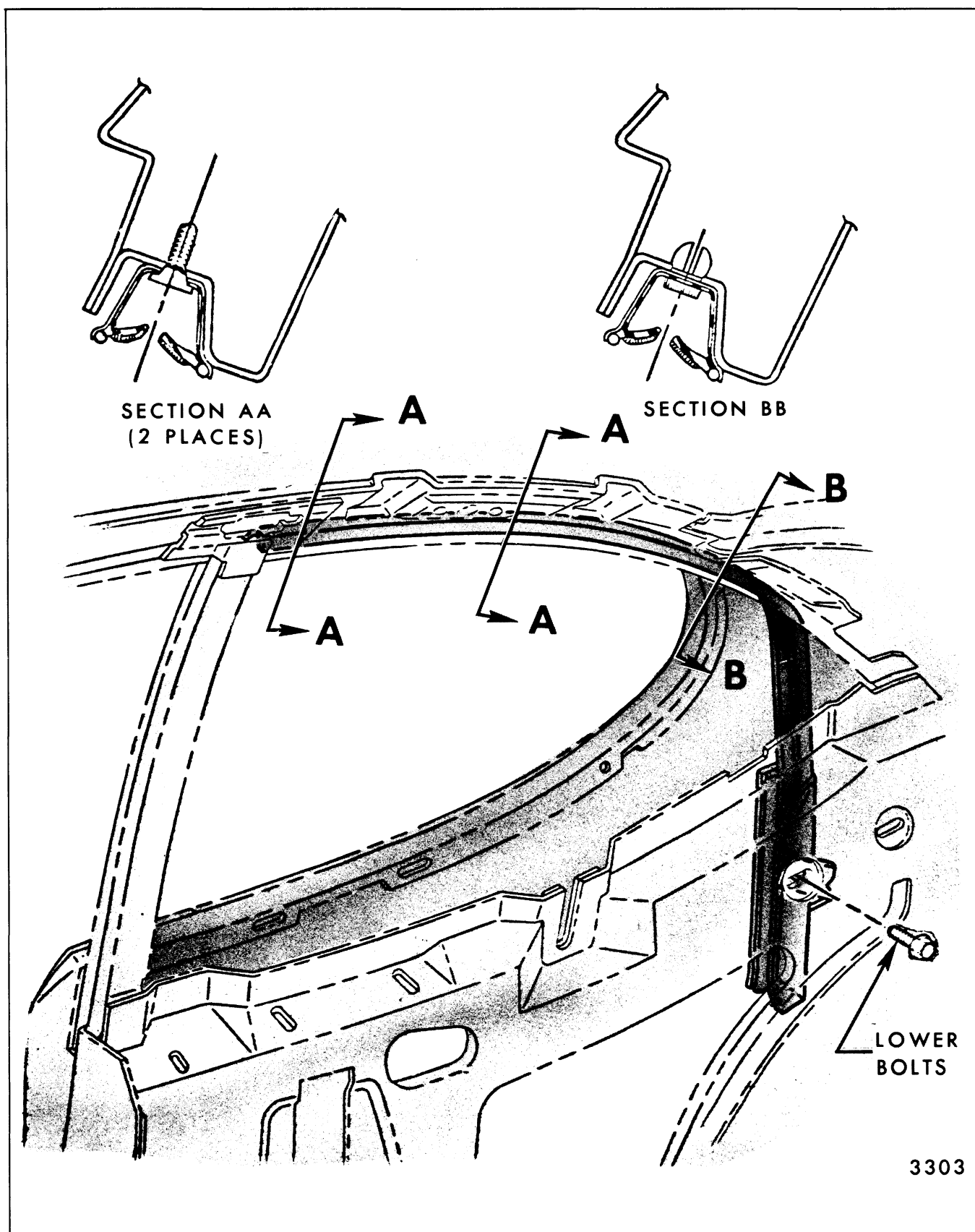


Fig. 6-27-Rear Quarter Window Glass Run Channels - Typical of All Closed Styles

5. Prior to installation, inspect foam sealing material for any damage that could result in waterleaks, and replace as necessary.
6. To install, reverse removal procedure.

## REAR QUARTER WINDOW FRONT RUN CHANNEL - All Closed Styles

### Removal and Installation

1. Remove rear quarter window as previously described.
2. Remove screws along length of run channel securing channel to body (Fig. 6-28).
3. To remove run channel, carefully pry run channel from body pillar with a flat-bladed tool.
4. To install, reverse removal procedure. Prior to installation, inspect sealing material on body pillar or run channel and replace or add to as required.

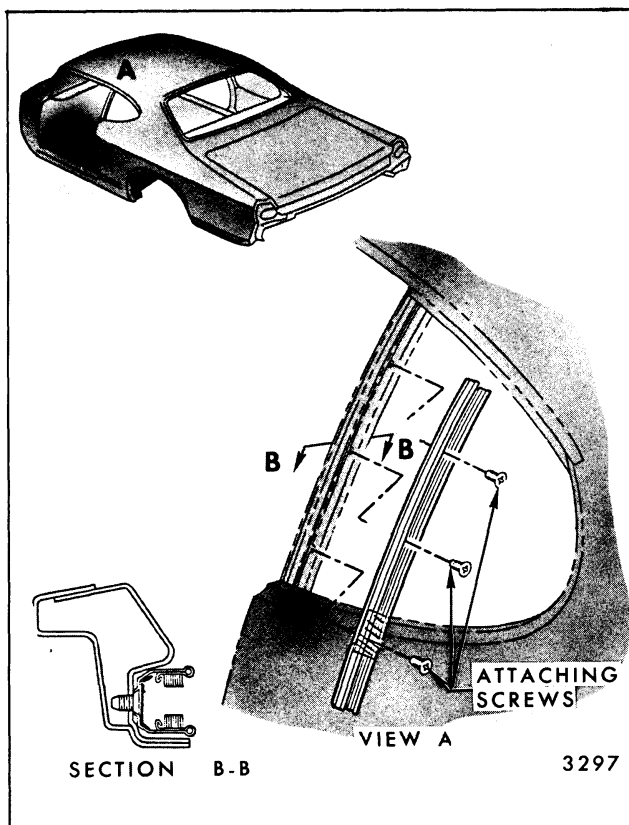


Fig. 6-28-Rear Quarter Window Front Glass Run Channel  
Typical of All Closed Styles

## REAR QUARTER WINDOW ASSEMBLY - "B, C and E" Hardtop and Convertible Styles, Except 6EL47 Style

### Description

"B, C and E" hardtop and convertible style rear quarter window assemblies consist of a solid tempered safety plate glass window with a bolted-on lower sash guide plate and roller assembly that operates within a center guide assembly. The 6EL47 styles utilize a stationary quarter window assembly. For 6EL47 style quarter window assembly removal, refer to stationary glass removal procedures in Section 1 of this manual.

Figures 6-31 and 6-32 are typical of "B, C and E" hardtop and convertible styles, except Cadillac 6EL47 styles. These illustrations identify the component parts of the rear quarter hardware by style, their relationship and various attaching points.

Figure 6-29 is a typical exploded view of "B, C and E" style window assembly and identifies the various components and their assembly sequence.

**NOTE:** When installing glass to sash channel bolts, or nylon roller nuts, torque to 72 inch pounds (6 foot pounds). When replacing window assembly, install new glass spacers ("9", Fig. 6-29).

Figure 6-30 illustrates usage of tool J-22055 or equivalent for removal of quarter window glass roller nuts.

### Adjustments

The rear quarter window guide is secured to the quarter inner panel at top and bottom by supports. These supports provide in or out, fore or aft and up or down adjustment. One down-stop and two up-stops are provided for alignment operations.

### Removal and Installation

1. Remove rear seat cushion, seat back, rear quarter trim and inner panel water deflector or loading hole cover. On "67" styles, lower folding door.
2. Lower glass to half down position.
3. Remove rear up-travel stop bolt ("5", Fig. 6-33 for "B and C" Styles and 6-34 for "E" Styles) and remove stop from inner panel.
4. Remove lower down-travel stop bolt ("5", Fig. 6-33 for "B and C" Styles and 6-34 for "E" Styles) and remove stop from inner panel.

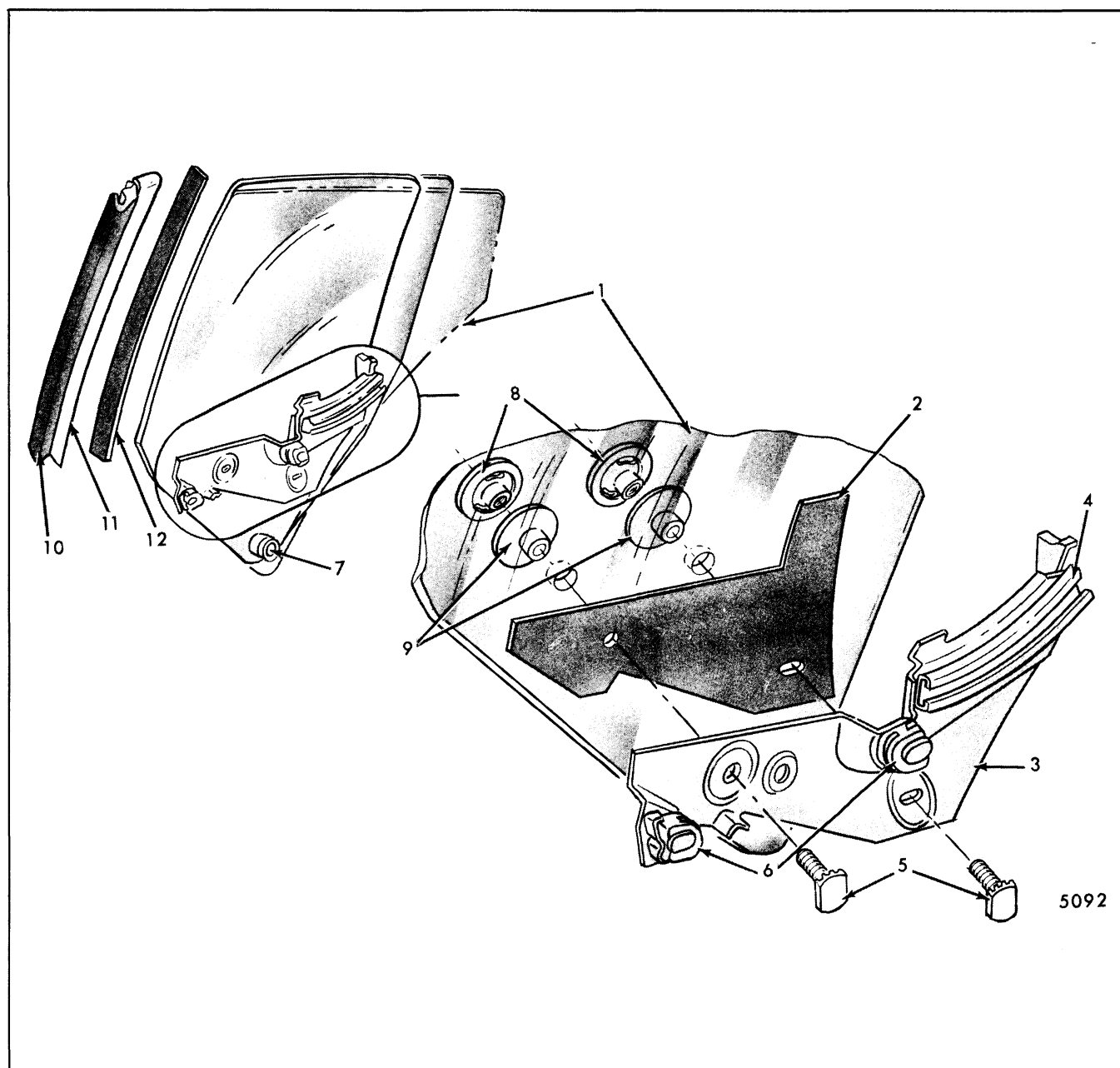


Fig. 6-29-Rear Quarter Window Assembly - "B, C and E" Styles

- |                                |  |                                 |
|--------------------------------|--|---------------------------------|
| 1. Glass                       | 6. Front and Rear Guide Bearings           | 10. Front Vertical Weatherstrip |
| 2. Lower Sash Channel Filler   | 7. Center Guide Roller                     | 11. Front Vertical Channel      |
| 3. Lower Sash Channel          | 8. Sash Channel to Glass Nut               | 12. Front Vertical Filler       |
| 4. Lower Sash Channel Cam      | 9. Sash Channel to Glass Bushing (Spacers) |                                 |
| 5. Sash Channel to Glass Bolts |  |                                 |

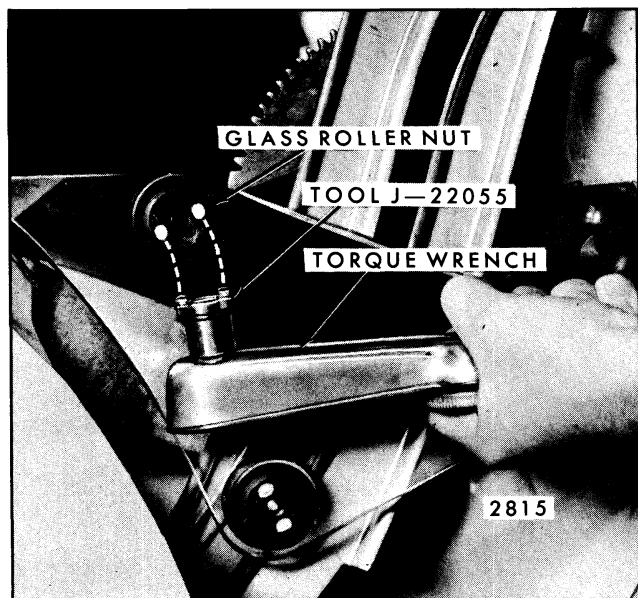


Fig. 6-30-Quarter Window Roller Removal

5. Remove attaching bolts from upper support assembly to inner panel ("2", Fig. 6-33 for "B and C" Styles and 6-34 for "E" Styles).
6. Remove attaching bolts from lower guide support ("6", Fig. 6-33 for "B and C" Styles and 6-34 for "E" Styles).
7. On "B and E-67" styles lower folding top.
8. Disengage regulator lift arm from sash channel cam and remove glass and guide as an assembly (Fig. 6-35).
9. To install, reverse removal procedure.

## REAR QUARTER WINDOW REGULATOR (Manual or Electric) - "X-27" Styles

### Removal and Installation

1. Remove necessary trim and water deflector.
2. On all electric styles, disconnect wire harness at motor.
3. While supporting window, disengage clip retainer securing regulator lift arm to glass and prop window in a full-up position.
4. Remove regulator attaching bolts. Figure 6-36 is typical of closed style regulator attachment.
5. Remove regulator through large access hole.

6. To install, reverse removal procedure.

## REAR QUARTER WINDOW REGULATOR (Manual or Electric) - "B, C and E" Hardtop and Convertible Styles, Except 6EL47

### Removal and Installation

1. Remove glass and guide assembly as outlined under Rear Quarter Window Assembly.
2. On styles with electric operated windows disconnect wire at motor.
3. Remove quarter window rear up-stop.

**NOTE:** On styles with electric operated windows it may be necessary to remove quarter window down-stop.

4. Remove regulator attaching bolts. Remove regulator through access hole (see Fig. 6-33 for "B and C" Styles and 6-34 for "E" Styles).
5. To install, reverse removal procedure.

## REAR QUARTER WINDOW REGULATOR MOTOR - All Styles

### Description

The electric motor assembly, which powers the electrically operated window regulators, is a 12 volt reversible direction motor with an internal circuit breaker and a self-locking gear drive. The motor is secured to the regulator assembly with bolts.

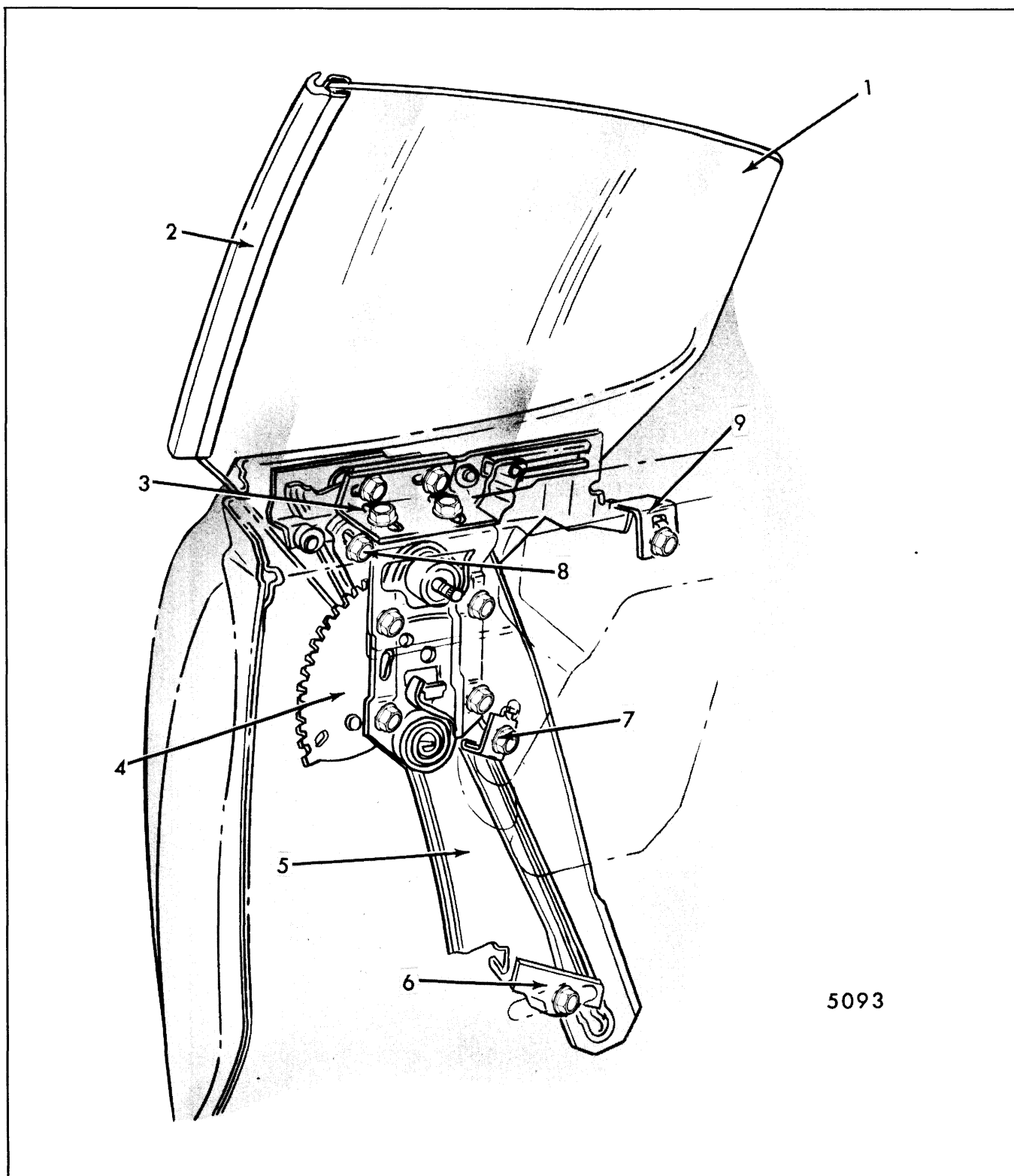
### Removal and Installation

1. Remove front quarter window electric regulator and clamp assembly in a vise (Fig. 6-37).

**NOTE:** The position of regulator assembly in vise will vary with type of regulator and position of lift arm.

2. Drill a 1/4" hole through regulator back plate and sector gear. The exact point of this hole will be dependent on the position of the regulator lift arm.

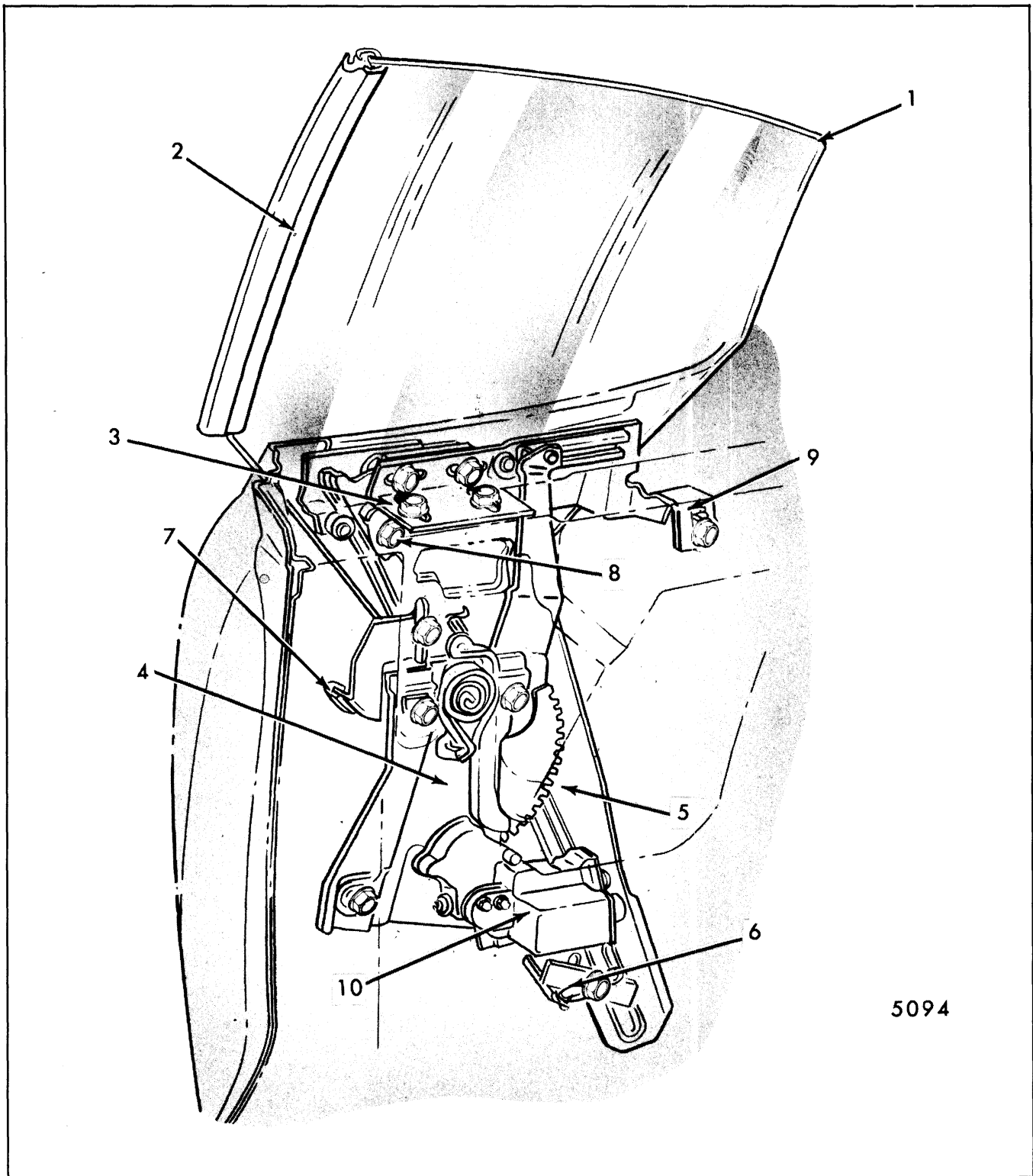
**CAUTION:** DO NOT drill into the motor housing, part of which is indicated by the dotted line illustrated in Figure 6-37. In addition, locate hole sufficient distance from edge of sector gear to insure proper retention of sector gear to back plate.



5093

Fig. 6-31-Quarter Window Hardware - "B, C and E" Hardtop Convertible Styles, Except Cadillac 6EL47 Styles

- |   |                           |                                 |                              |
|---|---------------------------|---------------------------------|------------------------------|
| 1. Quarter Window Glass                   | 3. Upper Support Assembly | 6. Lower Guide Support Assembly | 8. Upper Front Stop Assembly |
| 2. Vertical Sash Channel and Weatherstrip | 4. Regulator Assembly     | 7. Lower Down Stop Assembly     | 9. Upper Rear Stop Assembly  |
|   | 5. Guide                  |                                 |                              |



5094

Fig. 6-32-Quarter Window Hardware - B, C and E" Styles (Power Window)

- |   |                           |                                 |                              |
|---|---------------------------|---------------------------------|------------------------------|
| 1. Quarter Window Glass                   | 3. Upper Support Assembly | 6. Support Assembly Guide Lower | 9. Rear Up-Travel Stop       |
| 2. Vertical Sash Channel and Weatherstrip | 4. Regulator Assembly     | 7. Down Stop                    | 10. Motor and Drive Assembly |
|   | 5. Guide Assembly         | 8. Front Up-Travel Stop         |                              |

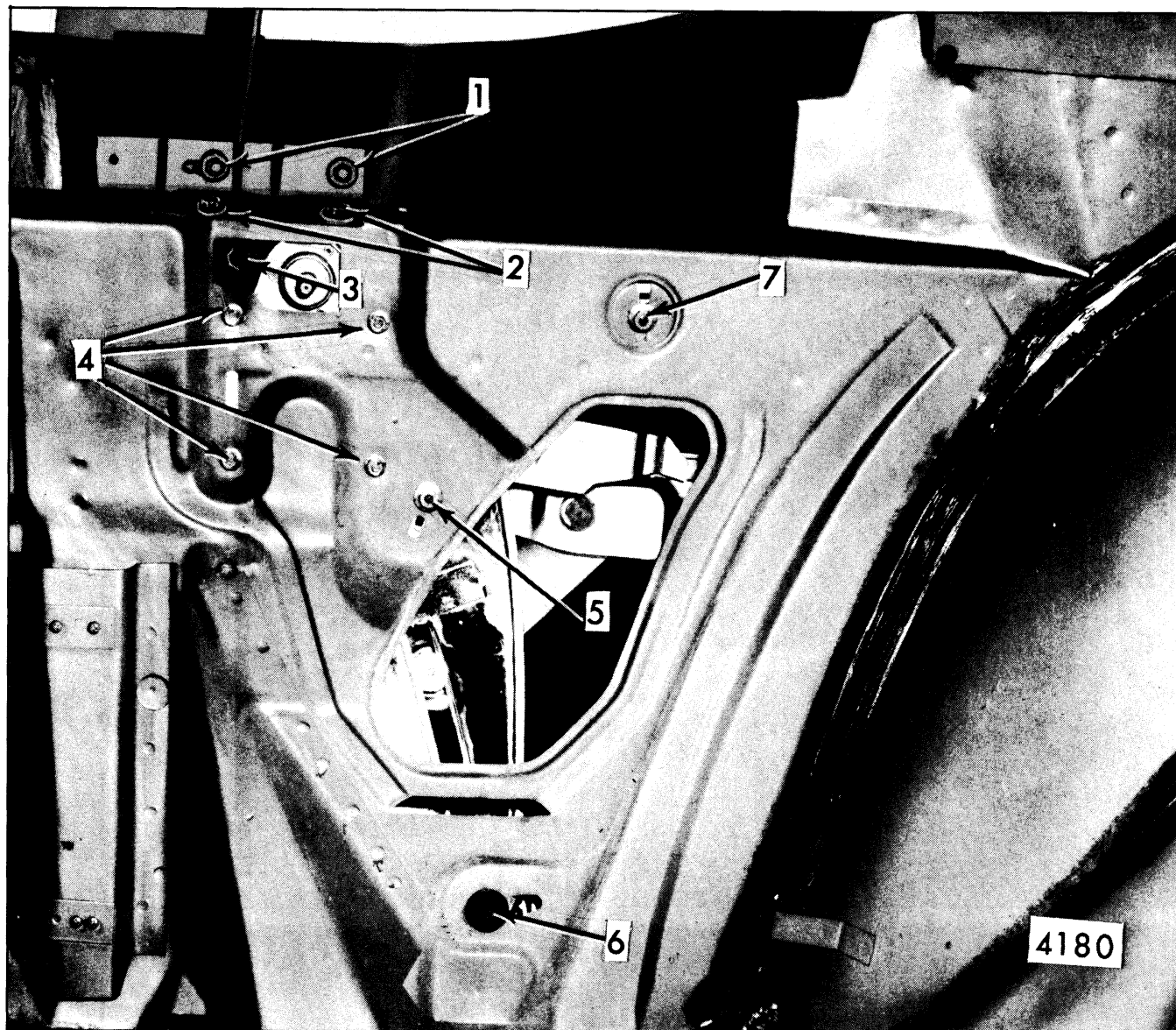


Fig. 6-33-Rear Quarter Hardware - "B and C-47, 57 and 67" Styles

- |  |   |                                     |   |
|--|---|-------------------------------------|---|
| 1. Upper Support to Window Guide Attaching Bolts | 2. Upper Support to Inner Panel Attaching Bolts | 3. Front Up-Travel Stop             | 6. Window Guide Lower Support to Inner Panel Attaching Bolt |
|  |   | 4. Window Regulator Attaching Bolts | 7. Rear Up-Travel Stop                                      |
|  |   | 5. Down-Travel Stop                 |   |

3. Install a 3/16" bolt through hole in regulator back plate and sector gear and install a nut on the bolt. DO NOT tighten nut.

**WARNING:** BE SURE TO PERFORM STEPS 2 AND 3 BEFORE ATTEMPTING TO REMOVE MOTOR FROM REGULATOR ASSEMBLY. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE REGULATOR COUNTERBALANCE SPRING AND CAN CAUSE SERIOUS IN-

**JURY IF MOTOR IS REMOVED FROM REGULATOR WITHOUT LOCKING THE SECTOR GEAR IN POSITION WITH A NUT AND BOLT.**

4. Remove regulator motor attaching bolts and remove motor from regulator assembly (Fig. 6-37).

**CAUTION:** Clean off any steel chips from regulator sector gear and motor pinion gear.



Fig. 6-34-Rear Quarter Hardware - "E-57 and 67" Styles Shown, "E-87" Style Similar

- |  |   |                                     |   |
|--|---|-------------------------------------|---|
| 1. Upper Support to Window Guide Attaching Bolts | 2. Upper Support to Inner Panel Attaching Bolts | 3. Front Up-Travel Stop             | 6. Window Guide Lower Support to Inner Panel Attaching Bolt |
|  |   | 4. Window Regulator Attaching Bolts | 7. Rear Up-Travel Stop                                      |
|  |   | 5. Down-Travel Stop                 |   |

5. To install, reverse removal procedure. If difficulty is encountered in lining up motor attaching holes with regulator assembly, the regulator lift arm may be moved into position manually so that motor pinion gear will mesh with teeth on regulator sector gear. After installation of window assembly, cycle electric regulator several times before installing inner panel water deflector and trim pad.

**CAUTION:** Be sure to remove temporary nut and bolt securing regulator back plate to regulator sector gear before installing assembly into quarter.

## REAR QUARTER VENT WINDOW - "A" Body Station Wagon

### Description

A swing out quarter window is available on certain "A" body station wagon styles. The hinge straps are welded to the front vertical channel and the channel is then pressed onto the glass. The lock support is attached to an integral hole in the glass and is secured to the latch assembly by a removable roll pin. The component parts of the latch, support assembly and front vertical channel are serviceable.



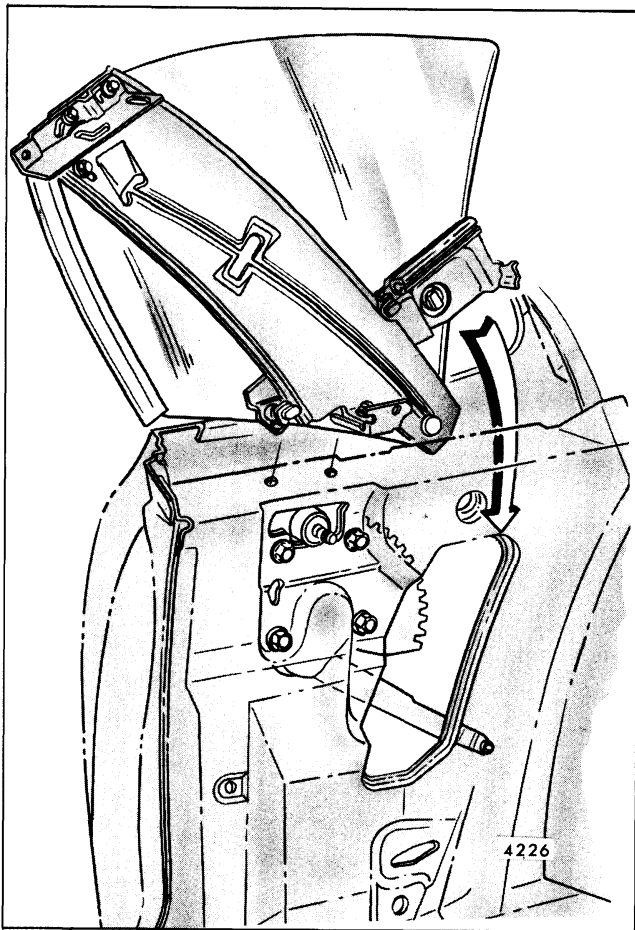


Fig. 6-35-Quarter Glass and Guide Assembly

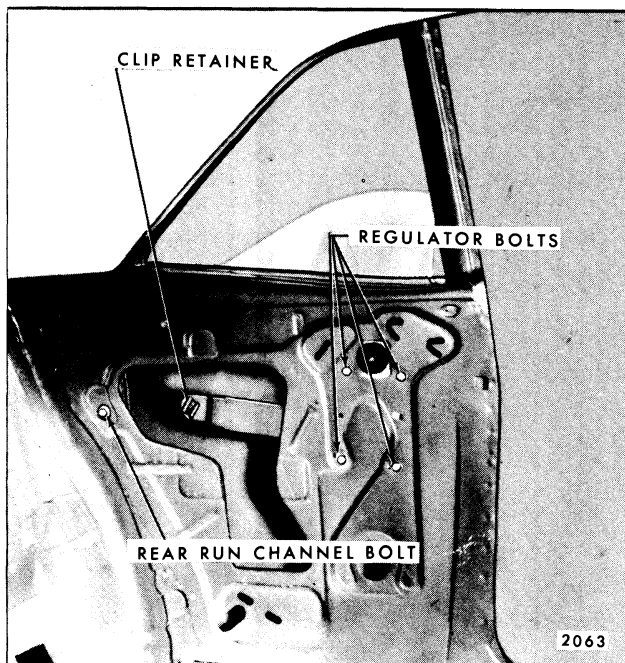


Fig. 6-36-Rear Quarter Hardware Attachment - "X" Closed Styles

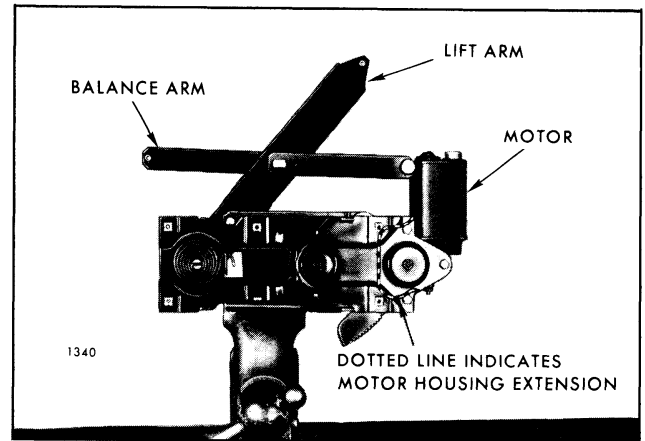


Fig. 6-37-Window Regulator Shown, Quarter Window Regulator Similar.

### Glass Assembly Removal

1. Loosen and remove trim as required to remove three screws securing latch assembly to body (Fig. 6-38).
2. Swing glass outboard far enough to permit disengagement of hinge straps (Fig. 6-39).

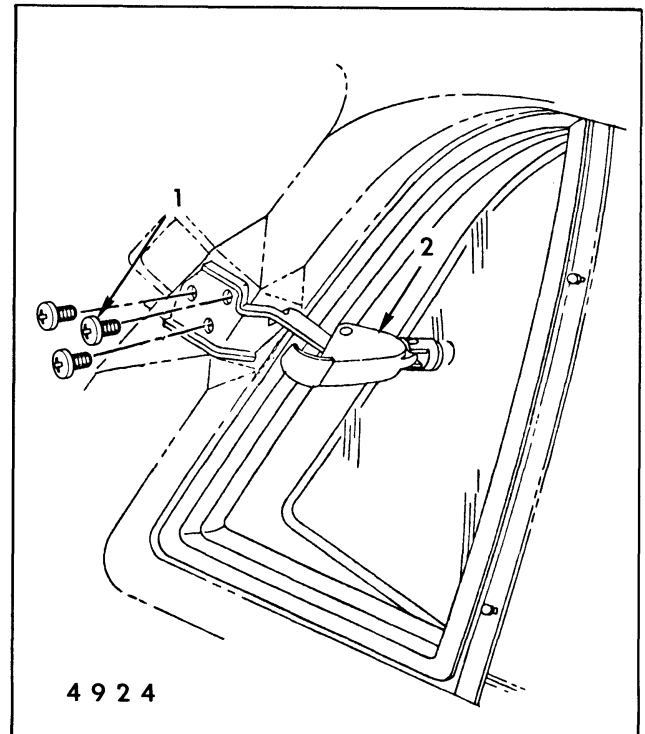


Fig. 6-38-Quarter Vent Window - "A" Station Wagons

1. Latch Assembly to Body Attaching Screws
2. Latch Assembly

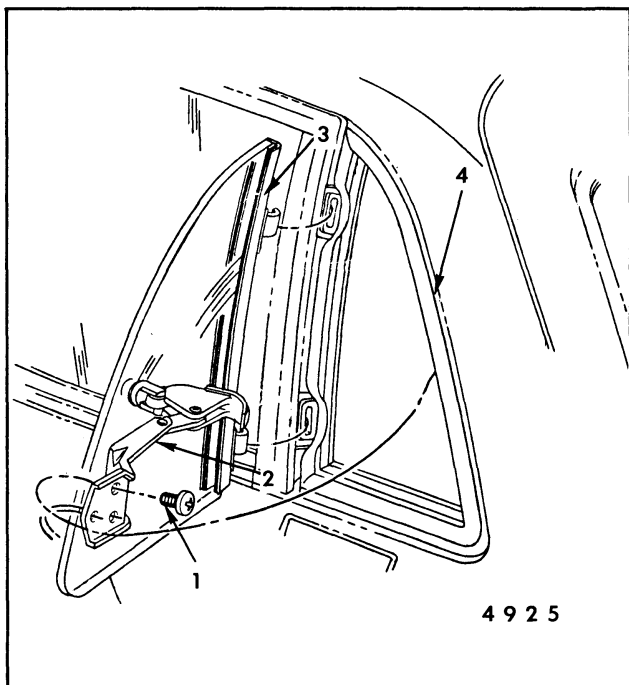


Fig. 6-39-Quarter Vent Window - "A" Station Wagons

- |  |                     |
|--|---------------------|
| 1. Latch Assembly to Body Attaching Screws | 2. Latch Assembly   |
|  | 3. Vertical Channel |
|  | 4. Weatherstrip     |

### Glass Assembly Installation

1. Position forward edge of glass assembly to window opening and engage hinge straps.
2. Swing glass closed and drive latch to body attaching screws.

### Latch and Support - Removal and Installation

1. Remove glass assembly from body as previously described.

2. Using a flat end punch, remove latch to support attaching roll pin.
3. Remove support attaching screw.
4. Disengage support button and bushings from support to glass attaching hole.
5. To install, reverse removal procedure.

### Swing-Out Quarter Window Weatherstrip - Removal

1. Remove glass as previously described.
2. Using a flat bladed tool, carefully disengage weatherstrip, starting at body pillar and working around entire window opening.

### Installation

1. Clean pinchweld flange of any foreign material around entire window opening.
2. Starting at body pillar, install weatherstrip into pinchweld flange around entire window opening.

### REAR QUARTER WINDOW (STATIONARY) - All Bodies

#### Description

for Removal and installation procedures covering the stationary rear quarter window, refer to the "General Information" section of this manual.

# SECTION 7

## REAR END

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## REAR COMPARTMENT LID

### INTRODUCTION

The service operations necessary for the removal, installation, adjustment and sealing of the rear compartment lid assembly and individual compartment lid hardware components are contained in this section.

### REAR COMPARTMENT LOCK CYLINDER EMBLEM

#### Description

Various rear compartment lock cylinder emblems are utilized on many different styles. They can be classified into three basic groups: Swivel Emblem - Stud and Nut Retained (Fig. 7-2), Swivel Emblem - Rivet Retained (Fig. 7-3), and Fixed Emblem - Integral Clip Retained (Fig. 7-4). In all cases, these emblems are installed over the lock cylinder which necessitates emblem removal prior to lock cylinder replacement.

#### Removal and Installation

1. On styles equipped with swivel emblems retained by stud nuts, open rear compartment lid and remove attaching nuts and carefully remove (pry) emblem from lid assembly.

**NOTE:** On Cadillac "E" Styles, access to emblem attaching nuts requires removal of inner panel lock cylinder access hole cover (Fig. 7-1). To remove, drill out rivets with 5/32" diameter drill bit.

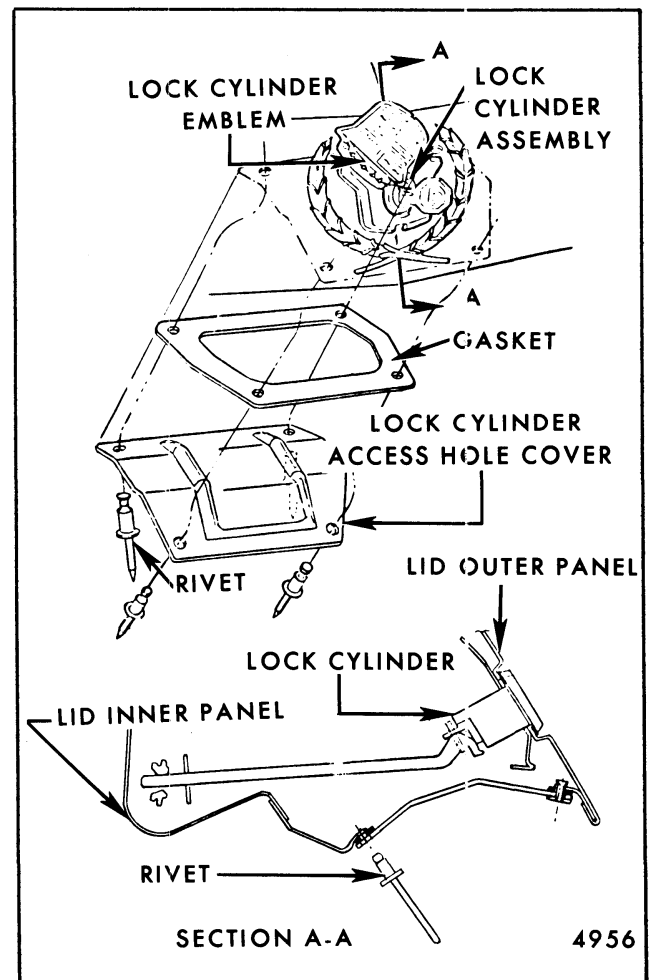


Fig. 7-1-Lock Cylinder Access Hole Cover - Cadillac "E" Style

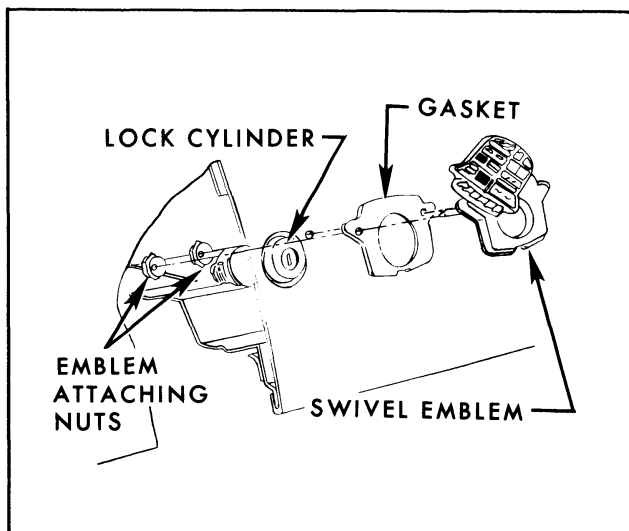


Fig. 7-2-Typical Swivel Emblem - Stud and Nut Retained - Cadillac "C and E" Styles Shown

2. On styles equipped with swivel emblems retained by rivets, drill out rivets with 5/32" diameter drill bit and remove emblem.
3. On styles equipped with fixed emblems retained with integral clips, protect painted surface of outer panel and carefully pry emblem from rear compartment lid to remove.
4. To install, align emblem and gasket with attaching holes in lid assembly and press firmly to engage integral clips, install stud nuts or new 5/32" x 7/16" "pop" rivets or equivalent. Seal base of attaching studs or rivet holes with suitable sealer.

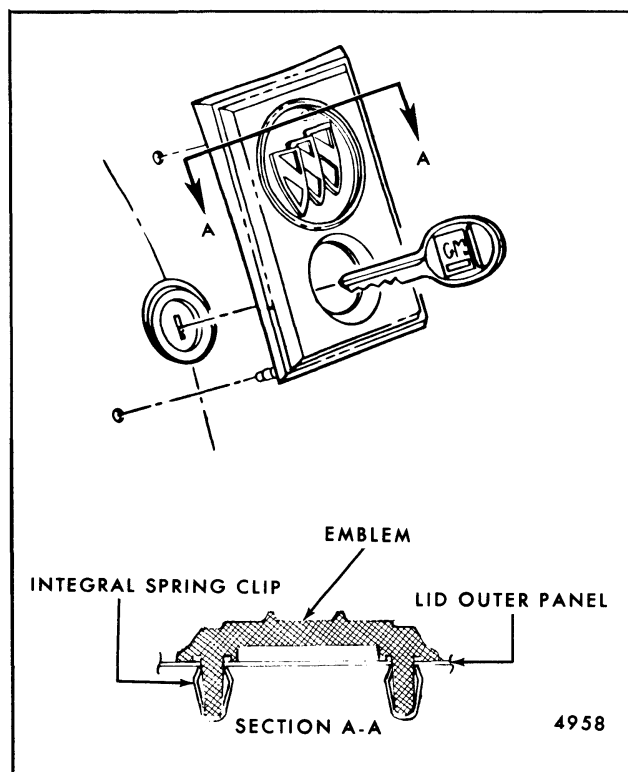


Fig. 7-4-Typical Fixed Emblem - Integral Clip Retained

## REAR COMPARTMENT LID LOCK CYLINDER - All Styles

### Description

On most styles, the rear compartment lid lock cylinder is located on the lid assembly. On remaining

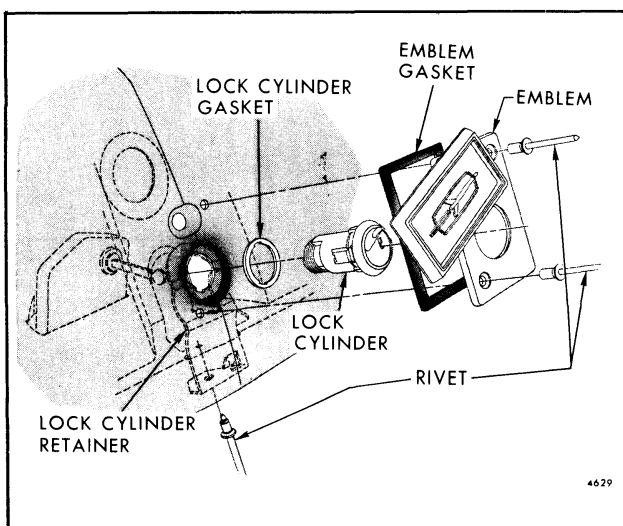


Fig. 7-3-Typical Swivel Emblem - Rivet Retained - Oldsmobile "B" Style Shown

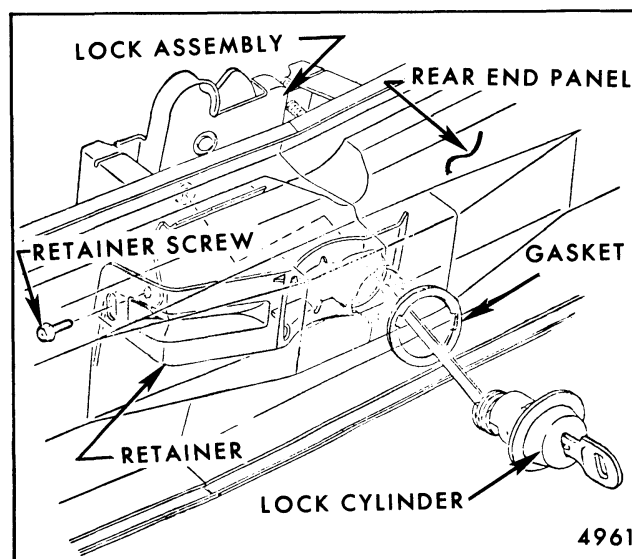


Fig. 7-5-Side Loading Lock Cylinder Retainer - Chevrolet "A-57" Style

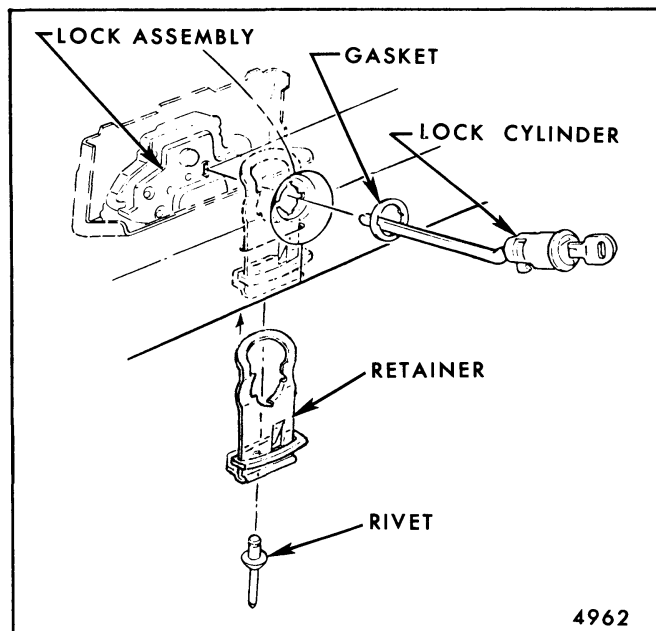


Fig. 7-6-Typical Bottom Loading Lock Cylinder Retainer - Oldsmobile "B" Style Shown

styles, the cylinder is located on the rear end panel. The basic method of cylinder attachment is by means of a retainer which is secured by a screw or rivet. Chevrolet and Pontiac "F" styles utilize stud nut method of lock cylinder retention (Figs. 7-8 and 7-9). On styles equipped with lock cylinder emblems, it is necessary to remove the emblem, as previously described, prior to cylinder removal. Figures 7-5, 7-6 and 7-7 illustrate various lock cylinder retainer locations.

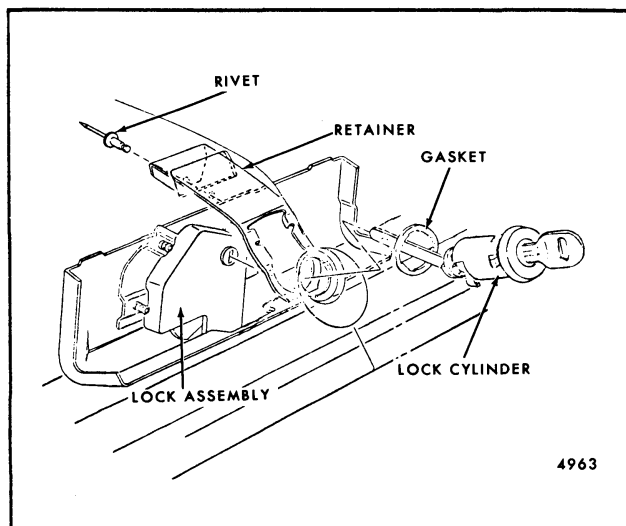


Fig. 7-7-Typical Top Loading Lock Cylinder Retainer - Chevrolet "A" Style Shown

## Removal and Installation

1. Open rear compartment lid.
2. On styles so equipped, remove lock cylinder emblem as previously described.
3. Remove lock cylinder retainer attaching screw, stud nuts or, using a 1/8" drill bit, carefully drill out rivet securing lock cylinder retainer to lid. Use care to avoid enlarging rivet hole.
4. Pull retainer away from lock cylinder to release; then remove cylinder from body.
5. To install, reverse removal procedure. Insure that lock cylinder shaft engages with lock and that gasket mates properly with outer panel to form a watertight seal. Check for proper operation of lock cylinder with key. Then, install retainer attaching screw, stud nuts or new 1/8 x 5/16" "pop" rivet or equivalent where rivet is specified.

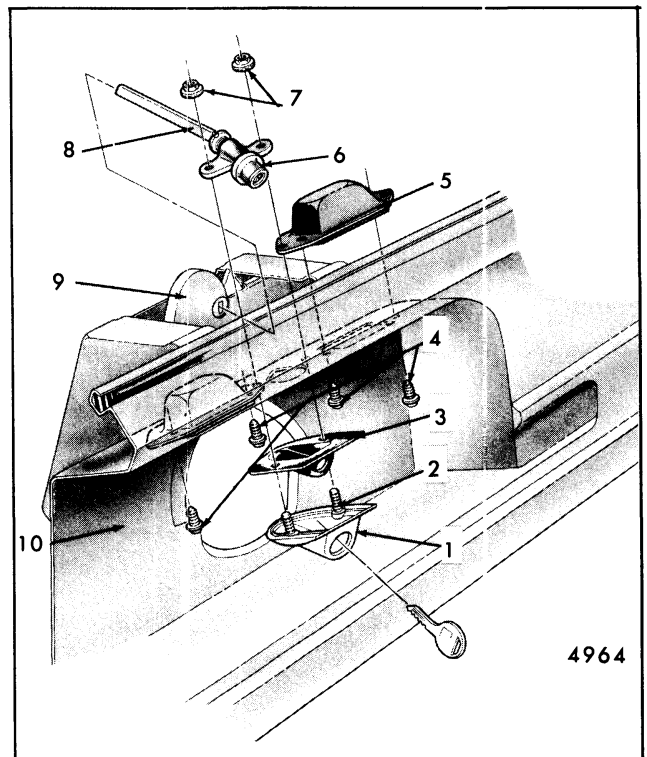


Fig. 7-8-Rear Compartment Lid Lock Cylinder - Chevrolet "F" Styles

- |  |  |
|--|--|
| 1. Lock Cylinder Housing                 | 6. Lock Cylinder Assembly                        |
| 2. Lock Cylinder Housing Attaching Bolts | 7. Lock Cylinder Assembly Housing Attaching Nuts |
| 3. Lock Cylinder Housing Gasket          | 8. Lock Cylinder Shaft                           |
| 4. Lamp Assembly Attaching Bolts         | 9. Rear Compartment Lock Assembly                |
| 5. Lamp Assembly Rear License            | 10. Rear End Panel                               |

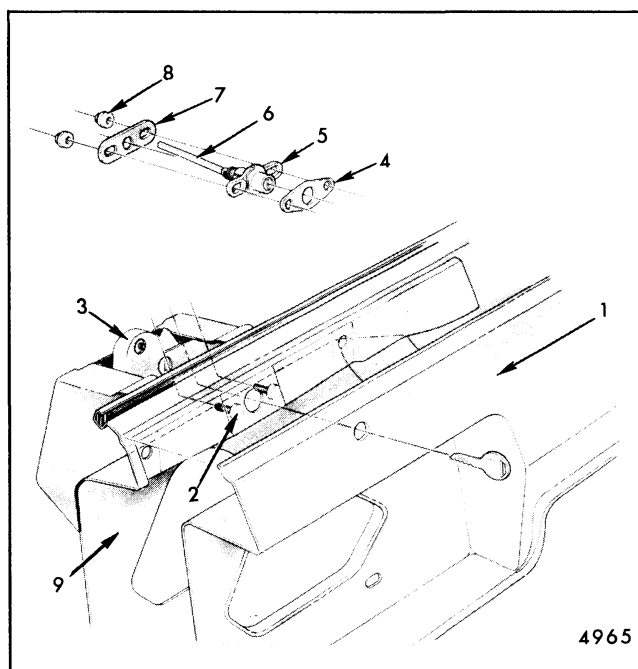


Fig. 7-9-Rear Compartment Lock Cylinder - Pontiac "F" Styles

- |   |                                 |
|---|---------------------------------|
| 1. Rear End Finishing Panel                       | 5. Lock Cylinder Assembly       |
| 2. Rear Compartment Lock Cylinder Attaching Studs | 6. Lock Cylinder Shaft          |
| 3. Rear Compartment Lock Assembly                 | 7. Lock Cylinder Guard          |
| 4. Lock Cylinder Gasket                           | 8. Lock Cylinder Attaching Nuts |
|   | 9. Rear End Panel               |

## REAR COMPARTMENT LID LOCK - All Styles

### Description

All rear compartment lids incorporate an "open face" lock. The term "open face" refers to the construction of lock frame which does not completely encase the lock mechanism. The lock mechanism becomes encased by the panel or reinforcement to which it is bolted.

All rear compartment locks are mounted in the lid except on Chevrolet "A-57" and "F" styles which are mounted to the rear end panel reinforcement.

When electric lid release option is specified, a solenoid assembly is bolted onto the existing lock using two of the original lock bolts (Fig. 7-11).

The electric lid release unit is designed to unlock a rear compartment lid from inside the car. The specific operating instructions are covered in detail in the Owner's Manual.

### Adjustments

Rear compartment lid locks are adjustable laterally, regardless of location, to provide for proper lid operation and lock to striker engagement.

To determine if lock or striker adjustment is required, proceed as follows:

1. Make certain rear compartment lid is properly aligned.
2. With lid in an open position, apply a small quantity of modeling clay on lock frame at both sides of lock hook. Then, close lid with moderate force.
3. Open lid and check amount of engagement of striker with lock frame as indicated by indentations in clay. Striker bar indentations in clay should be uniform on both sides of lock frame. Where required, loosen striker or lock attaching screws and adjust lock to obtain proper engagement. Close lid and check for proper lid and key operation.
4. Secure lock attaching bolts 57-87 inch pounds torque.

### Removal and Installation

1. Open rear compartment lid and remove lock cylinder and shaft as previously described.
2. Remove attaching bolts securing lock (Figs. 7-12 and 7-13) to rear compartment lid or rear end panel.

**NOTE:** On all styles equipped with electric lid release units, disconnect electric feed wire connector, remove two solenoid-to-lock attaching bolts and remove solenoid. Remove third lock bolt to remove lock (refer to Fig. 7-11).

3. To install, reverse removal operations. Close lid and check lock engagement with striker. Make necessary adjustments as outlined under adjustments.

## REAR COMPARTMENT LID LOCK STRIKER - All Styles Except Cadillac Styles Equipped with Mechanical Pull-Down Unit

### Adjustments

Rear compartment lid lock strikers are adjustable vertically, regardless of location, to provide for proper lid operation and lock to striker engagement.

To determine if lock or striker adjustment are required, refer to rear compartment lock adjustments.

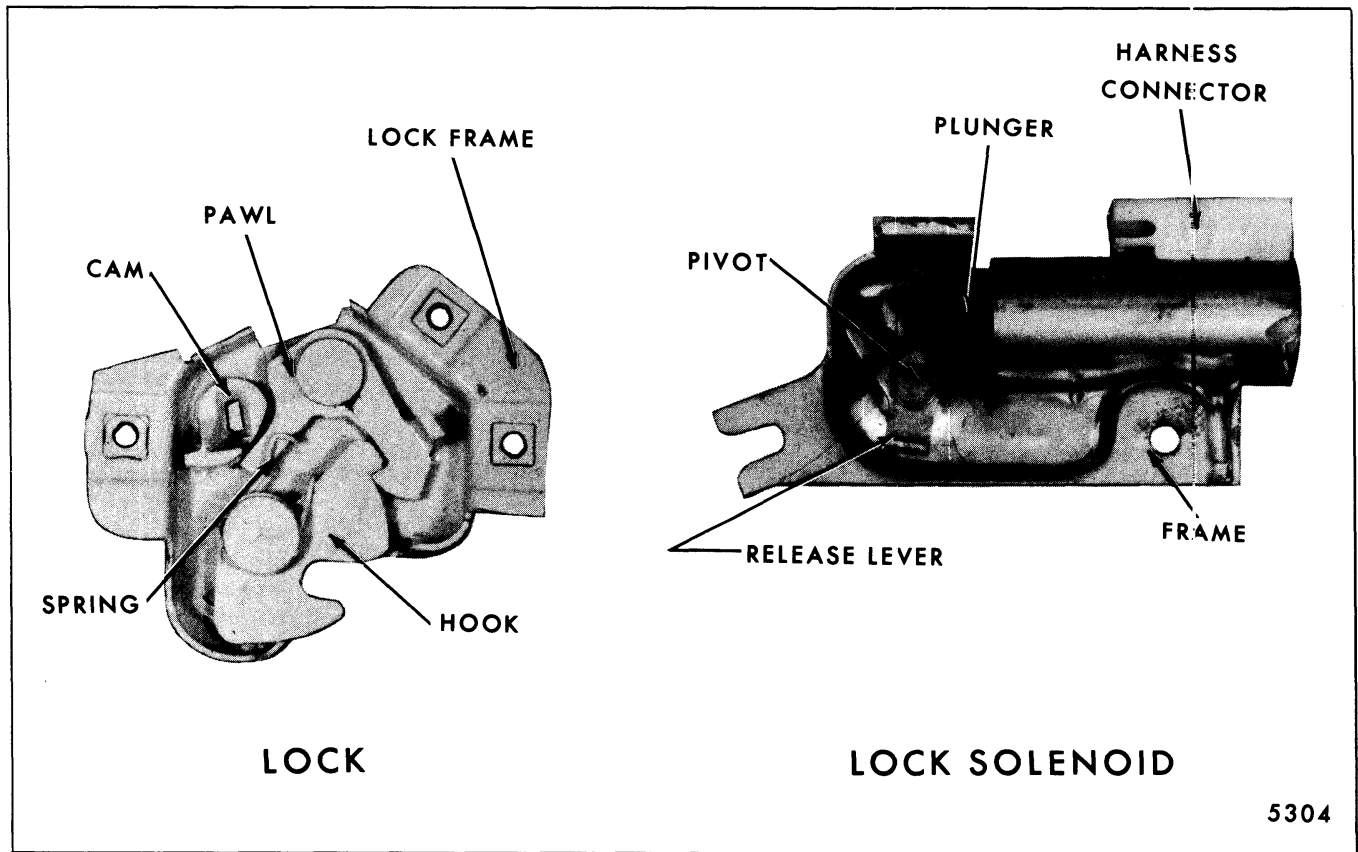


Fig. 7-10-Typical Rear Compartment Lid Lock and Solenoid

### Removal and Installation

1. Open rear compartment lid. Mark vertical position of striker by scribing a line at top of striker support or at base of lid or rear end panel.
2. Remove striker attaching screws and remove striker (Figs. 7-14 and 7-15).
3. To install, reverse removal procedure. Close lid and check lock to striker engagement. Make any necessary adjustments as outlined below.

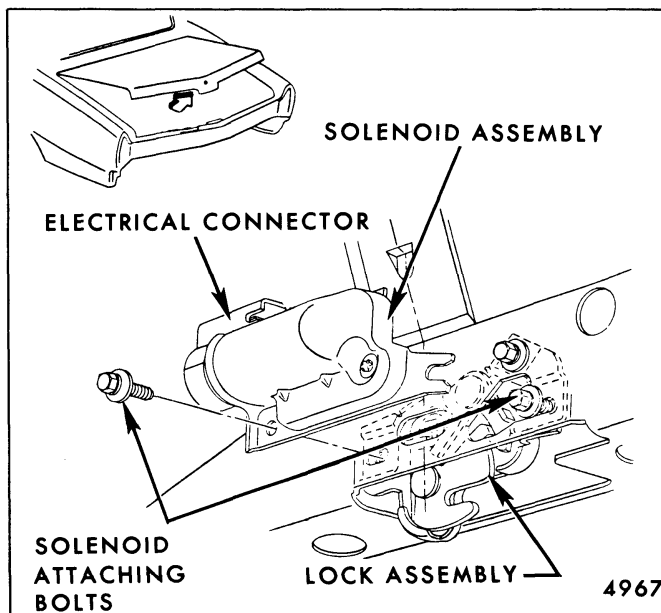


Fig. 7-11-Electric Lid Release Solenoid - All Styles

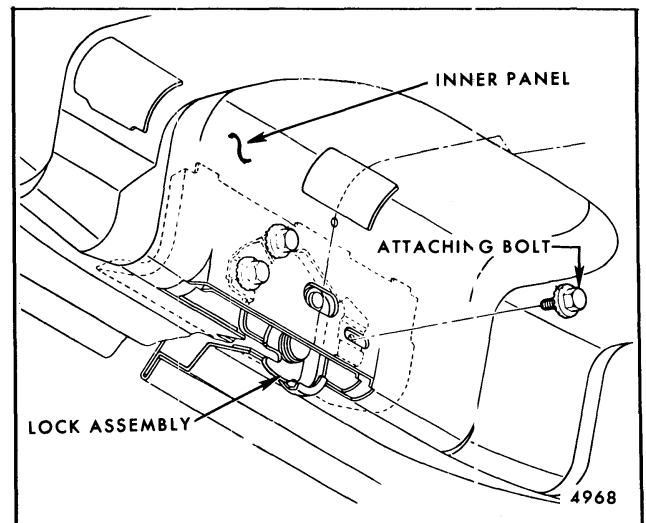


Fig. 7-12-Typical Rear Compartment Lock Mounted in Lid



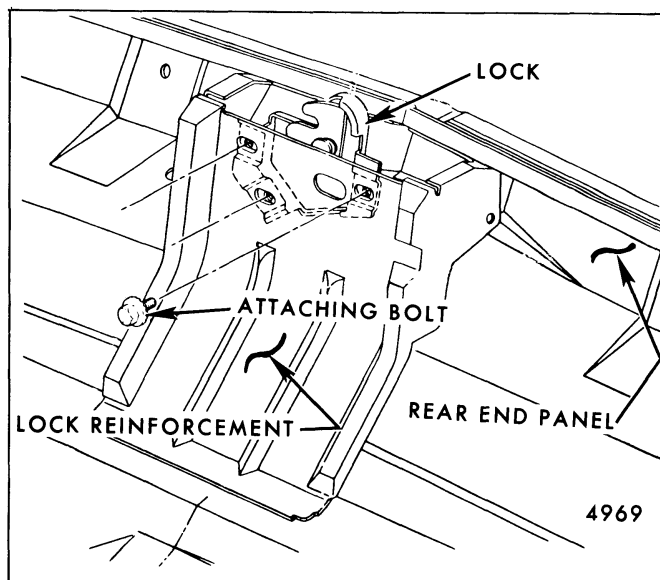


Fig. 7-13-Typical Rear Compartment Lock Mounted in Rear End Panel

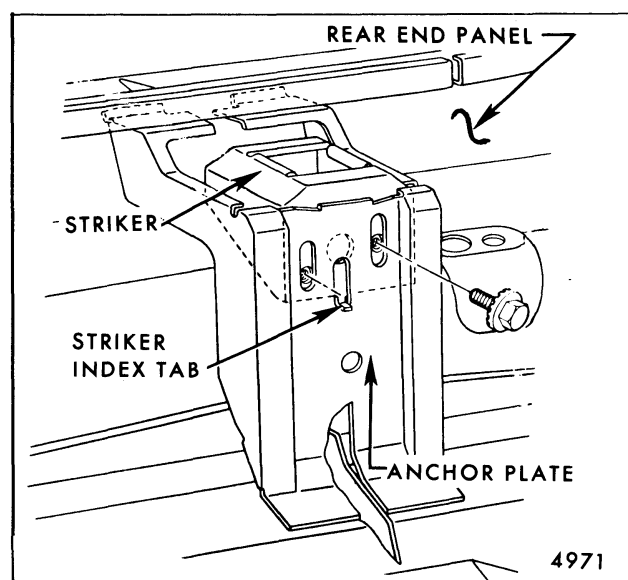


Fig. 7-15-Typical Rear Compartment Lock Striker Mounted in Rear End Panel

## REAR COMPARTMENT MECHANICAL PULL-DOWN UNIT AND ELECTRIC LID RELEASE ASSEMBLY - Cadillac Styles

### Description

The rear compartment lid mechanical pull-down unit is used in conjunction with the electric lid release (Figs. 7-11 and 7-16).

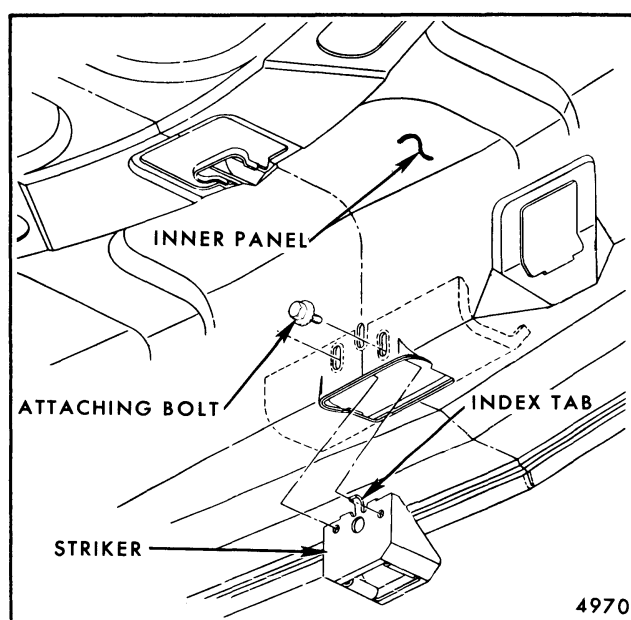


Fig. 7-14-Typical Rear Compartment Lock Striker Mounted in Lid

A hydraulic cylinder (Fig. 7-17 for "C" styles and Fig. 7-18 for "E" styles) is incorporated in the mechanism to achieve a slow, uniform closing action. On "C" styles the cylinder (Fig. 7-17) is attached to a bell crank at the right rear compartment lid hinge and to the closing unit by a cable (Figs. 7-19 and 7-16). On "E" styles, one end of the cylinder is attached to the bell crank at the right rear compartment lid hinge and to the closing unit by a cable (Figs. 7-18 and 7-16). When the rear compartment lid is lowered to a point where the lock engages with the striker (approximately 7/8" from a fully closed position), a piston forces the fluid through an orifice retarding the closing action of the spring in the hydraulic cylinder. Then, the mechanical closing unit pulls the lid the remaining distance (7/8") to a fully closed position.

### Adjustments

To actuate the mechanical pull-down unit, the rear compartment lid lock must properly engage the striker arm and the detent lever on the mechanical pull-down unit (Fig. 7-16) fully depressed. Engagement can be checked by lowering the lid and visually checking lock and striker alignment. If adjustment is necessary, obtain "lateral" adjustment at lock attaching screw locations and "up or down" adjustments at pull-down unit attaching screw locations.

For proper operation of the pull-down unit, the pull-down unit cable must be adjusted to the proper tension. If the cable has too much tension it will not allow the pull-down unit to return to its full-up position and "cock". This is apparent when, as the lid begins to lower, so does the pull-down unit.

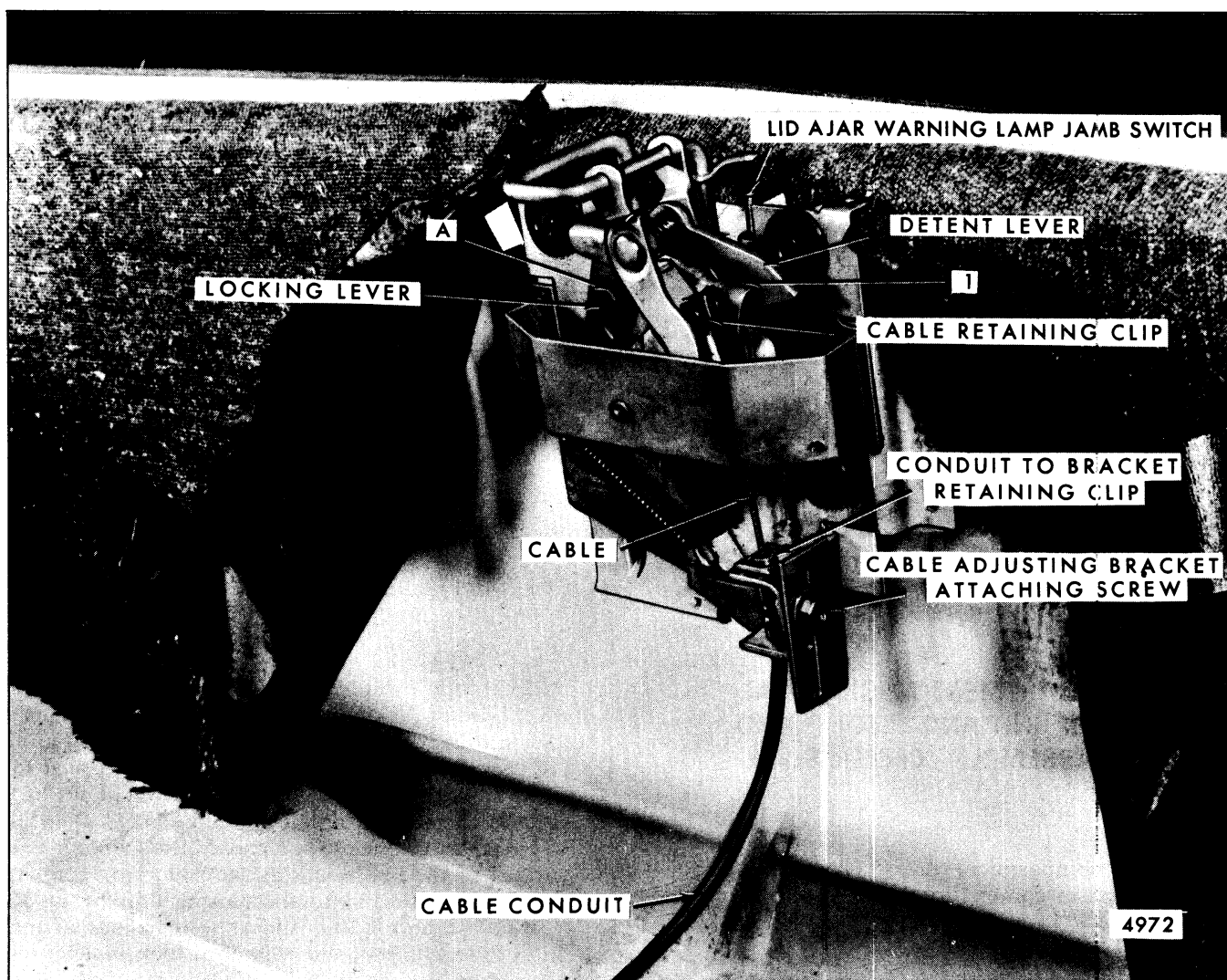


Fig. 7-16-Rear Compartment Mechanical Pull-Down Unit and Electric Lid Release - Cadillac Styles

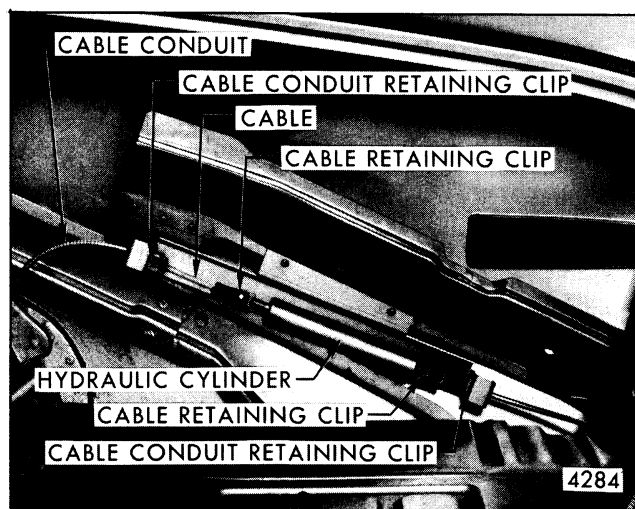


Fig. 7-17-Mechanical Pull-Down Unit Hydraulic Cylinder - Cadillac "C" Styles

Too little tension in the cable results in a lessening of pull-down effort in the unit and consequently, a misaligned (high) rear compartment lid.

To increase cable tension or if finer adjustment is required, loosen cable adjusting bracket attaching screw (Fig. 7-16) and adjust bracket downward (to increase cable travel), then, tighten attaching screw.

**CAUTION:** A lack of lubrication between the toggle and the detent lever ("1", Fig. 7-16) can greatly increase the effort required to trip (unlock) the pull-down unit. Therefore, make certain point of contact between these two levers is lubricated with "Lubriplate" or equivalent.

#### Removal and Installation

1. Open rear compartment lid and remove mechanical pull-down unit cover panel. Depress

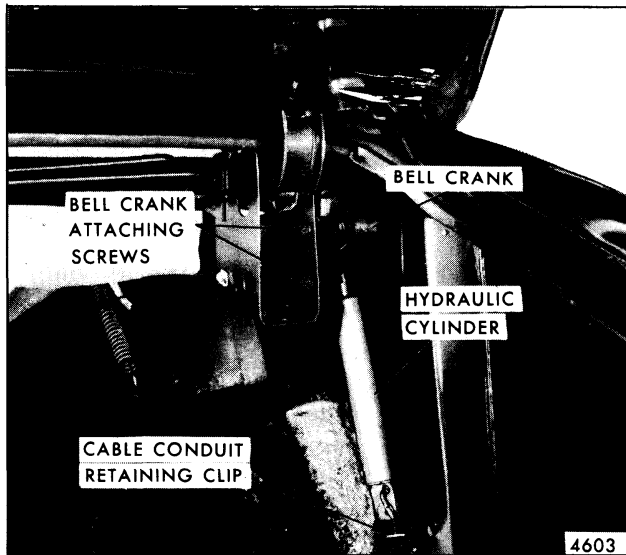


Fig. 7-18-Mechanical Pull-Down Unit Hydraulic Cylinder - Cadillac "E" Styles

striker slightly to relieve tension from cable and disengage clip securing cable to pull-down control arm (Fig. 7-16).

2. Disengage clip securing cable conduit to cable adjusting bracket and remove cable and cable conduit from pull-down unit.
3. Scribe position of pull-down unit on rear end panel to facilitate installation. Remove pull-down unit attaching bolts and disconnect electric feed wire (Fig. 7-16). Remove unit from body.
4. To install, reverse removal procedure.

## REAR COMPARTMENT MECHANICAL PULL-DOWN UNIT HYDRAULIC CYLINDER CABLES - Cadillac Styles

### Removal and Installation

1. Disengage cable and cable conduit retaining clips at both ends of cable (Figs. 7-16, 7-17 and 7-19). Then, remove cable assemblies.

**NOTE:** On "C" styles, to disengage cable from bell crank (Fig. 7-19), remove cable conduit support attaching bolts and rotate cable assembly to disengage eye on end of cable from bell crank.

2. To install, reverse removal procedure.

## REAR COMPARTMENT MECHANICAL PULL-DOWN UNIT HYDRAULIC CYLINDER - Cadillac Styles

### Removal and Installation

1. On "C" styles, disengage cable to hydraulic cylinder retaining clips at both ends of cylinder (Fig. 7-17) and remove cylinder.
2. On "E" styles, disengage cable from lower end of hydraulic cylinder as previously described. Then, lift cylinder to disengage upper end from shoulder to shaft on linkage portion of hinge assembly to remove cylinder.
3. To install, reverse removal procedure.

## REAR COMPARTMENT LID - All Styles Except "X-17" Style

### Adjustments

1. Fore-aft and lateral adjustment of the lid assembly is controlled by the hinge strap to lid attaching bolts. To adjust lid, loosen hinge strap to lid attaching bolts (Fig. 7-19) and shift lid to desired position. Then, tighten bolts.
2. Up and down adjustment of the lid assembly is accomplished by placing shims between the hinge strap and the lid assembly and by raising or lowering the rear compartment lid lock striker (for adjustment of striker, refer to lid lock striker adjustment).

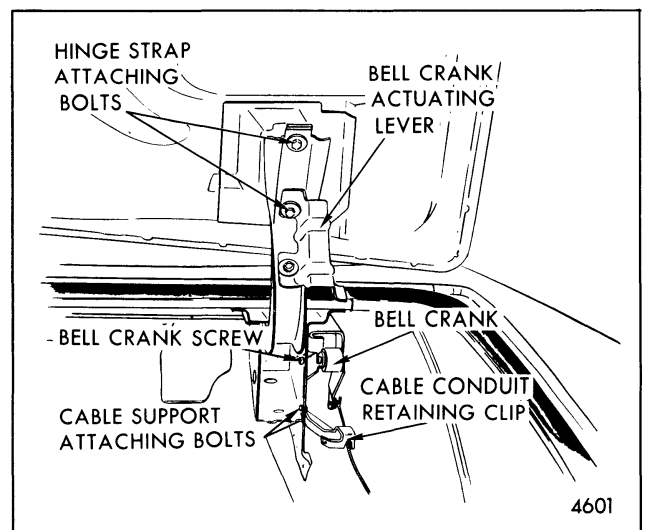


Fig. 7-19-Mechanical Pull-Down Unit Hydraulic Cylinder Cable Attachment - Cadillac Styles

To raise the right and/or left sides of the lid assembly, mark location of hinge on lid and install suitable shim between hinge strap and lid at forward bolt location. To lower lid, install shims at rear bolt locations.

### Removal and Installation

1. Open lid and place protective covering along edges of rear compartment opening to prevent damage to painted surfaces.
2. Where necessary, disconnect wire harness from rear compartment lid.
3. Mark location of hinge straps on lid inner panel.
4. With aid of helper, remove attaching bolts securing hinges to lid and remove lid (Fig. 7-19 depicts typical hinge for all styles except "X-17" style).
5. To install, reverse removal operations.

### REAR COMPARTMENT LID - "X-17" STYLE ONLY

#### Description

The rear compartment lid on the "X-17" style incorporates an adhesive caulked back window. It is hinged at the roof with weld-on body and lid side hinge halves which incorporate removable hinge pins. Lock and striker which are adjustable and lock cylinder are similar to those used on all other styles.

Opening assist is performed by tubular counterbalance support assemblies mounted at each side of the lid. Lid up-stop is incorporated within the support assembly.

#### Removal

1. Open rear compartment lid to full open.
2. Place protective covering between outer ends of lid and roof panel.

**WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH REAR COMPARTMENT LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.**

3. Perform following steps which helper(s) supports lid in fully open position.
4. Remove lid-side attaching nuts for both counterbalance support assemblies and disengage support assembly from lid-side anchor plate stud. Allow support assemblies to rest on compartment side panel trim.
5. Use a length of 3/16" diameter rod to remove hinge pins from hinge halves. As shown in Figure 7-20, place end of rod against pointed end of hinge pin; then strike rod firmly to shear retaining clip tabs and drive pin through hinge. Repeat operation on opposite hinge and remove lid from body.

### Installation

1. Install new retaining rings onto notches provided in hinge pins. Position rings so that tabs point toward head of pin as shown in Figure 7-20.
2. Place protective cover between outer ends of lid and roof panel.
3. With the aid of helper(s), mate lid side and body side hinge halves and install hinge pins with pointed end of pins facing outboard.
4. With lid held fully open, position counterbalance support assembly onto lid anchor plate stud and torque nut to 60 inch pounds. Repeat operation for opposite side.

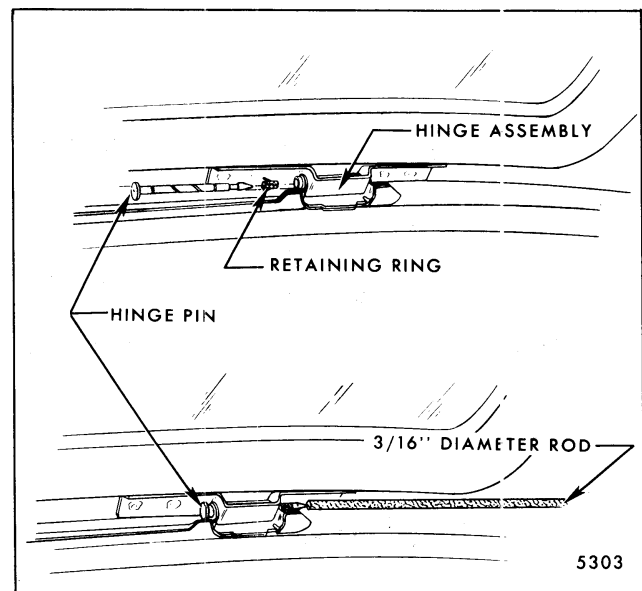


Fig. 7-20-Rear Compartment Lid Hinge - "X-17" Style

**NOTE:** Replace torque-tight nuts Part No. 9664875 or equivalent, when installing counter-balance support assembly. If not available, use previously removed attaching nuts after application of retaining adhesive Loctite/75 Part No. 1051343 or equivalent, as directed on package.

5. Remove protective cover from roof panel.

## REAR COMPARTMENT TORQUE RODS - All Styles Except "X-17" Style

### Description

Torque rods are used to control the amount of effort needed to operate the rear compartment lid and can be adjusted to increase or decrease operating effort.

### Adjustments

1. To increase the amount of effort required to raise the rear compartment lid or to decrease the amount of effort required to close the lid, reposition the end of the rod to a lower torque rod adjusting notch (Figs. 7-21, 7-22, 7-23 and 7-24).
2. To decrease the amount of effort required to raise the rear compartment lid or increase the amount of effort required to close the lid, reposition the end of the rod to a higher torque rod adjusting notch.

### Removal and Installation

1. For removal and/or adjustment of rear compartment lid torque rods, use tools outlined below:

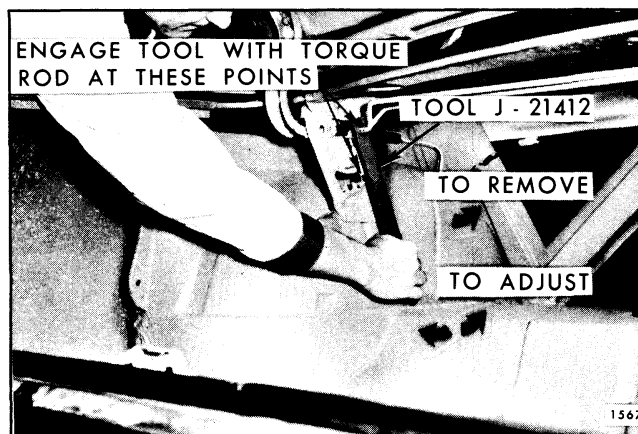


Fig. 7-21-Rear Compartment Torque Rod Adjustment - "X-27,69" Styles

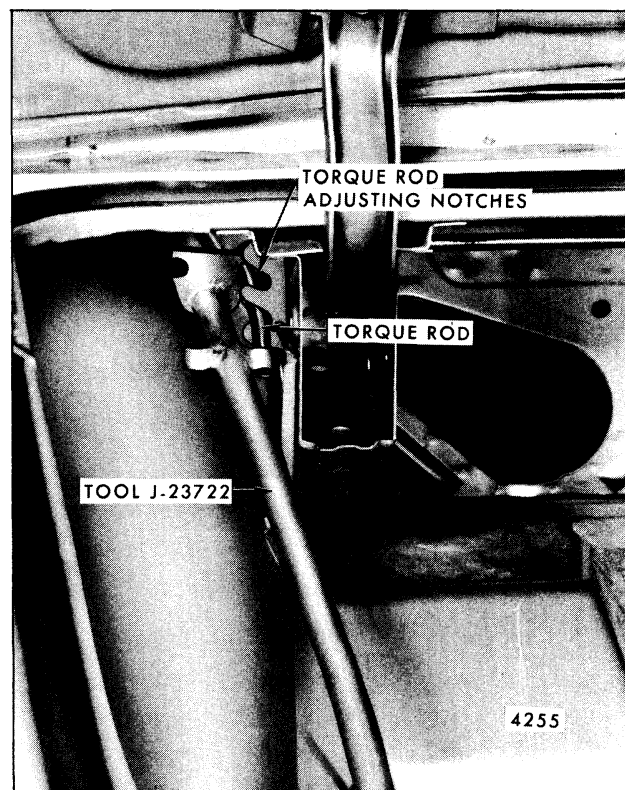


Fig. 7-22-Rear Compartment Torque Rod Adjustment - Cadillac "C and E" Styles

- a. On "X-27,69" styles, use tool J-21412 or equivalent (Fig. 7-21).
- b. On Chevrolet "B-47" styles, use tool J-23408 or equivalent.

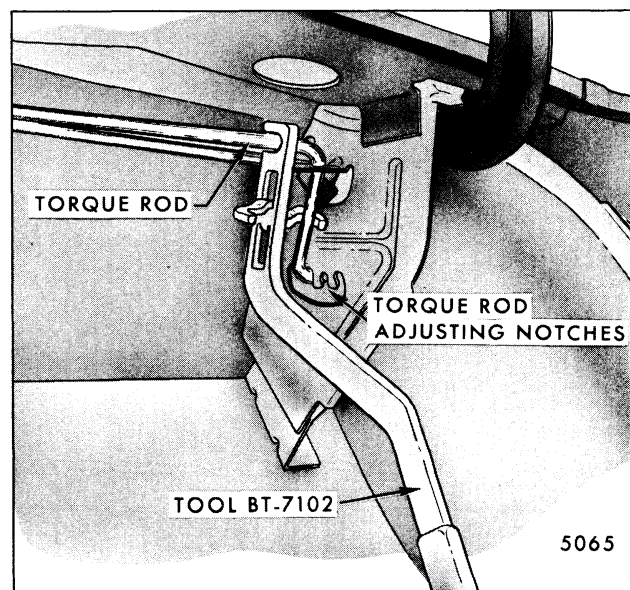


Fig. 7-23-Rear Compartment Torque Rod Adjustment - Oldsmobile "E" Styles

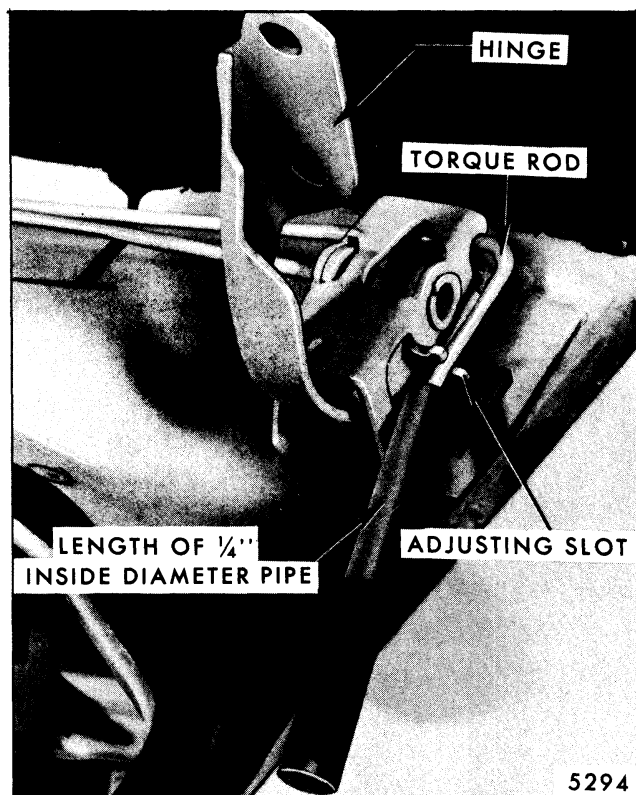


Fig. 7-24-Rear Compartment Torque Rod Adjustment - "F" Styles

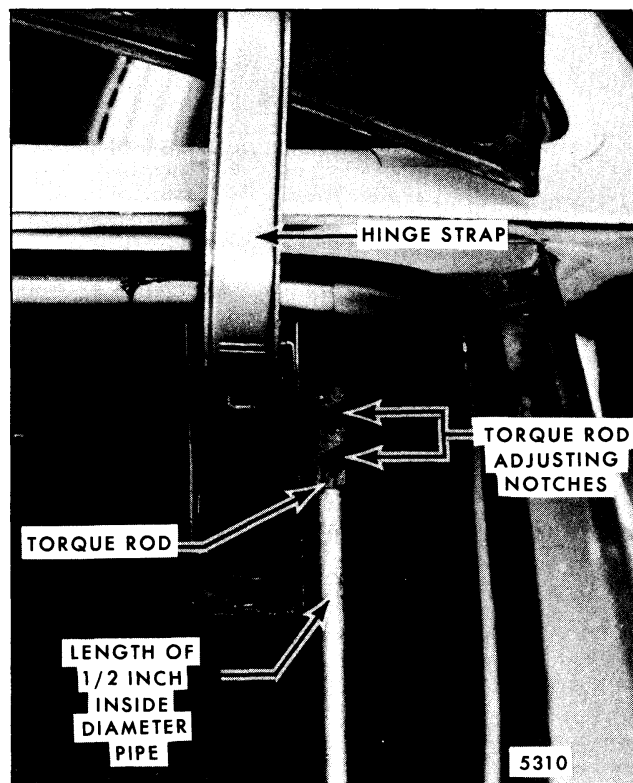


Fig. 7-25-Rear Compartment Torque Rod Adjustment - "A" Styles Shown, "B-C" and Buick "E" Style Similar

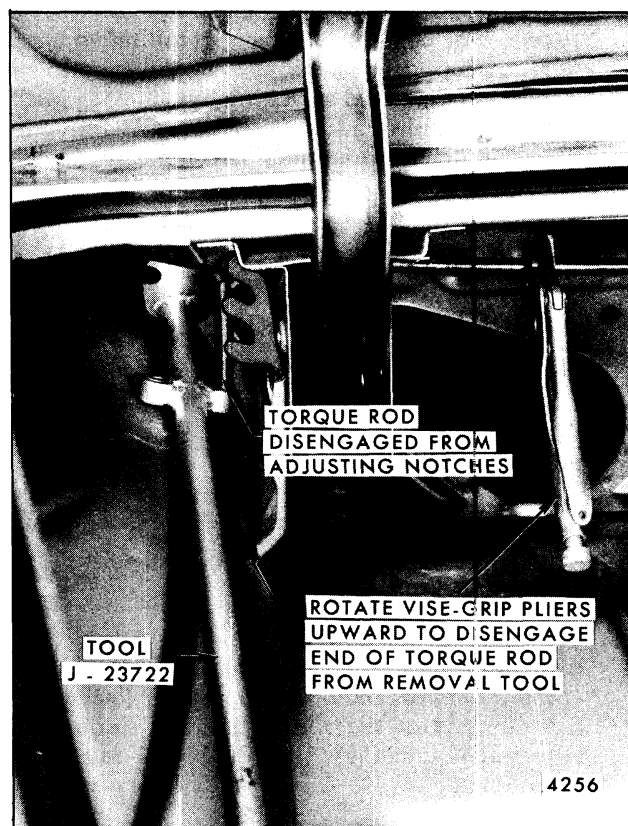


Fig. 7-26-Rear Compartment Torque Rod Removal - Cadillac "C and E" Styles

- c. On Cadillac "C and E" styles, use tool J-23722 or equivalent (Fig. 7-22).
- d. On Oldsmobile "E" styles, use tool BT-7102 or equivalent (Fig. 7-23).

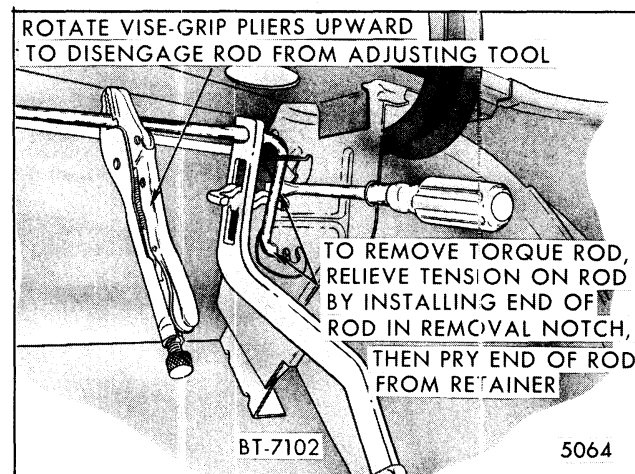


Fig. 7-27-Rear Compartment Torque Rod Removal - Oldsmobile "E" Styles

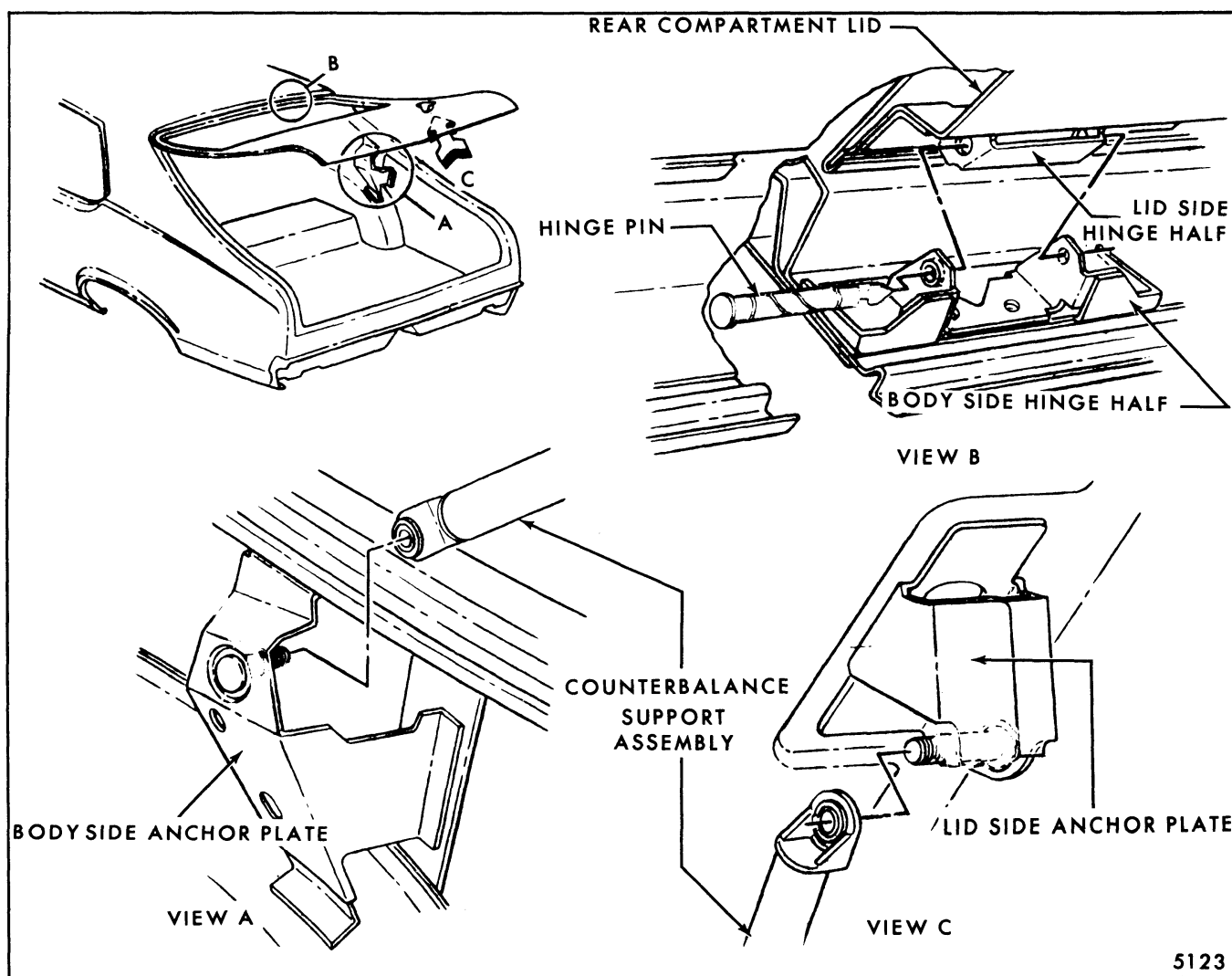
- e. On "F" styles, use a length of 1/4" inside diameter heavy wall pipe (Fig. 7-24).
  - f. On "A, B, C" and Buick "E" styles, except Cadillac "C" styles, use a length of 1/2" inside diameter heavy wall pipe (refer to Fig. 7-25).
2. To remove torque rods, disengage end of torque rod from adjusting notches on hinge strap, as shown in Figures 7-21, 7-26 and 7-27. Then, allow handle of removal tool to rotate forward to relieve tension on rod. In some cases, it may be necessary to install a pair of locking type pliers on rod, as shown in Figures 7-26 and 7-27, and lift upward on pliers to disengage removal tool from end of rod.
  3. Disengage opposite end of torque rod from hinge strap and remove rod from body.
  4. To install, reverse removal procedure.

## REAR COMPARTMENT LID COUNTERBALANCE SUPPORT ASSEMBLY - "X-17" Style Only

### Description

The counterbalance support assembly is a spring loaded telescoping tubular device that is utilized to assist lid opening effort. Up stop is provided within each assembly. A serviceable, snap-in nylon type grommet is used at each counterbalance support assembly end cap. Special grommet composition eliminates need for lubrication.

**WARNING: DO NOT ATTEMPT TO DISASSEMBLE COUNTERBALANCE SUPPORT ASSEMBLY UNDER ANY CIRCUMSTANCES BECAUSE THE SPRING CONTAINED THEREIN IS ALWAYS UNDER TENSION AND RELEASE OF SUCH A SPRING MAY RESULT IN PERSONAL INJURY.**



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Fig. 7-28-Counterbalance Support Assembly Attachment - "X-17" Style Only



## Removal and Installation

1. Fully open rear compartment lid and loosen compartment side panel trim sufficiently to gain access to body side counterbalance support assembly anchor plate.

**WARNING:** DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

2. Perform following steps while helper(s) supports lid in fully open position.
3. Remove lid and body side attaching nuts for counterbalance support assembly and disengage support from anchor plates. Repeat at opposite side if required.
4. To install, reverse removal procedure.

**NOTE:** Replace torque-tight nuts Part No. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after application of retaining adhesive Loctite/75 Part No. 1051343 or equivalent, as directed on package.

## Grommet Replacement

1. Remove counterbalance support assembly from body as previously described.
2. As a bench operation, pry grommet from end cap with flat blade screwdriver or similar tool.

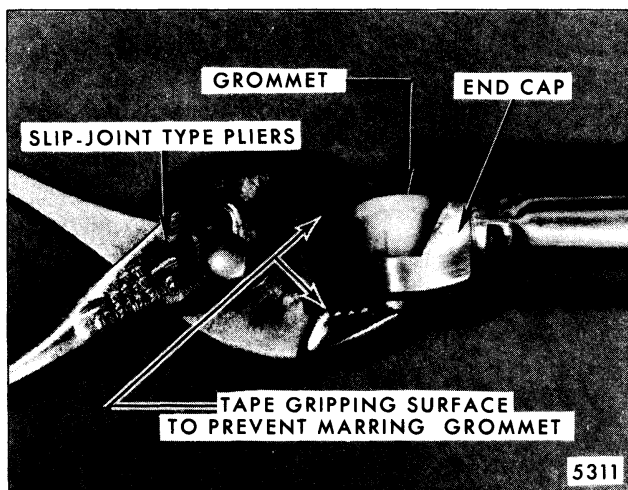


Fig. 7-29-Counterbalance Support Assembly Grommet Replacement - "X-17" Style Only

3. Locate new grommet to end cap eyelet and press into position with pliers or similar tool (Fig. 7-29).

**NOTE:** To prevent marring new grommet or end cap, tape gripping surface of pliers.

## REAR COMPARTMENT WEATHERSTRIP - All Styles

### Removal and Installation

1. Separate "butt" ends of weatherstrip at bottom rear of opening (Figs. 7-30 and 7-31).
2. Using flat-bladed tool, such as sharp bladed putty knife, carefully cut cemented bond of weatherstrip from outer surface of gutter (Figs. 7-30 and 7-31). Then, with a narrower sharp tool, such as a wood chisel, cut cemented bond of weatherstrip from bottom of gutter around opening and remove weatherstrip.
3. To install, clean out gutter around opening to provide clean cementing surface.
4. Apply generous bead of black weatherstrip cement to bottom surface of gutter around opening. With suitable brush, gently level applied cement.
5. Starting at rear center of opening with one end of weatherstrip, insert weatherstrip into gutter while cement is still wet. Use flat-bladed tool to aid installing weatherstrip. Avoid stretching weatherstrip during installation.

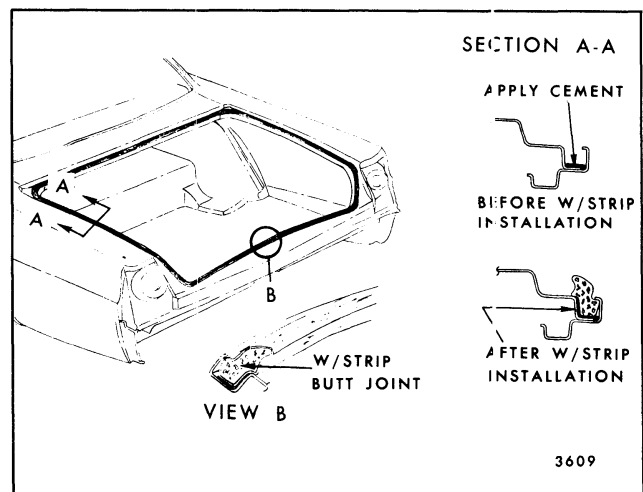


Fig. 7-30-Rear Compartment Weatherstrip - All Styles Except "X-17" Style



**NOTE:** On "X"-17 style, begin inserting center of weatherstrip (marked with yellow paint) into gutter at forward center of opening between hinges. This is required in order to locate reinforced section of weatherstrip to belt line area (Fig. 7-31). Also, notch finishing lip of weatherstrip at lower corners of opening to improve fit.

6. If weatherstrip is new, cut end to form butt joint at rear center of opening. Apply cement to both ends of weatherstrip to form a neat joint. Secure weatherstrip uniformly in gutter.

**NOTE:** On "X-17" style, insert plug into weatherstrip to maintain shape and form neat joint (Fig. 7-31, View "A").

7. Using a pressure type applicator, apply weatherstrip cement (neoprene type) between weather-

strip and outer surface of gutter completely around opening to assure a watertight seal (Figs. 7-30 and 7-31).

8. Roll or press weatherstrip to aid in obtaining good cement bond. Allow sufficient time for cement to set before closing rear compartment lid.

## REAR COMPARTMENT FRONT PANEL - "F" Styles and Oldsmobile "E" Styles

### Removal and Installation

1. With rear compartment lid raised, remove screws from lower edge of panel as shown in Figure 7-32 - "F" styles and Figure 7-33 - Oldsmobile "E" styles.
2. Remove back window lower reveal molding. (See "Exterior Moldings" Section).

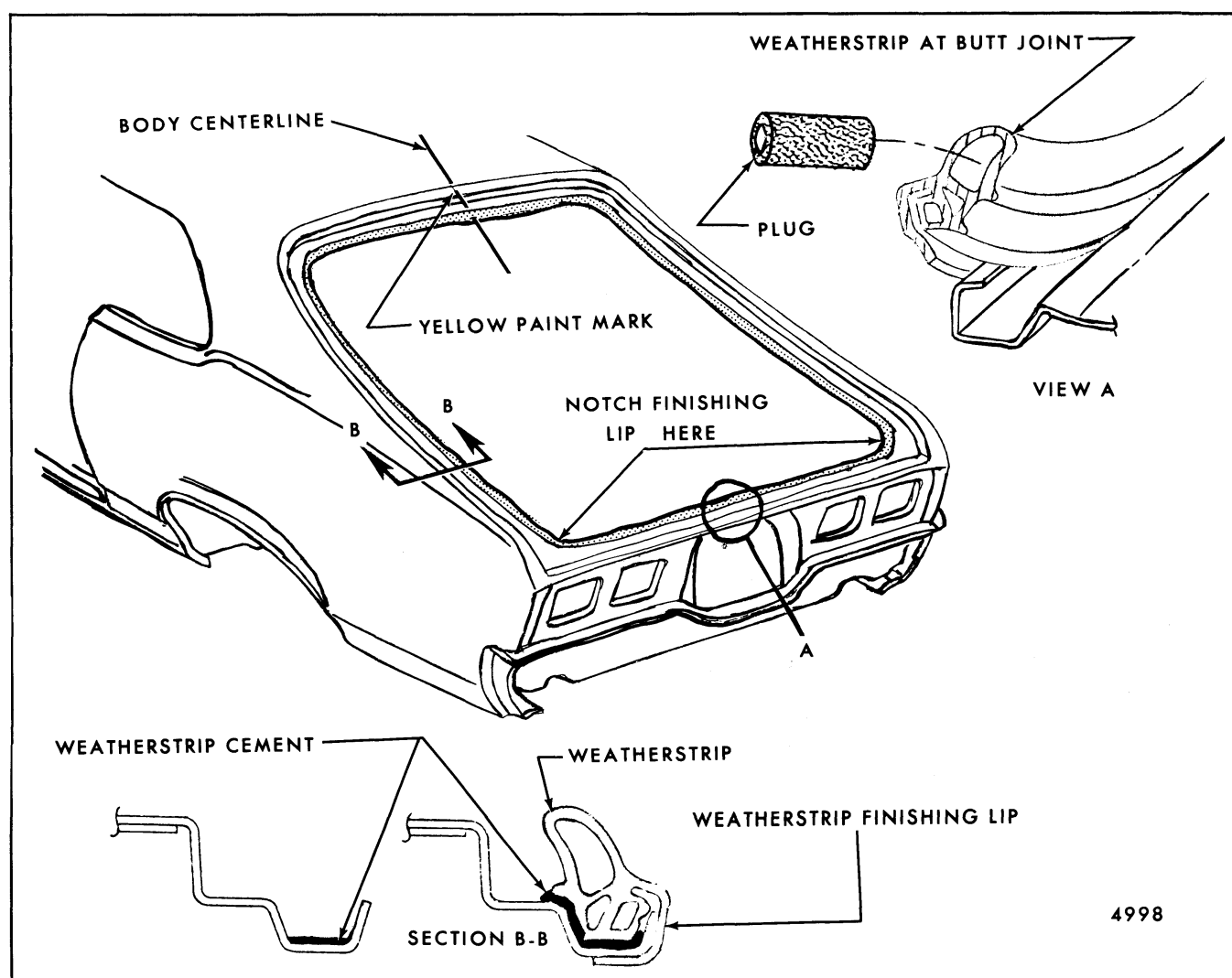


Fig. 7-31 - Rear Compartment Weatherstrip - "X-17" Style

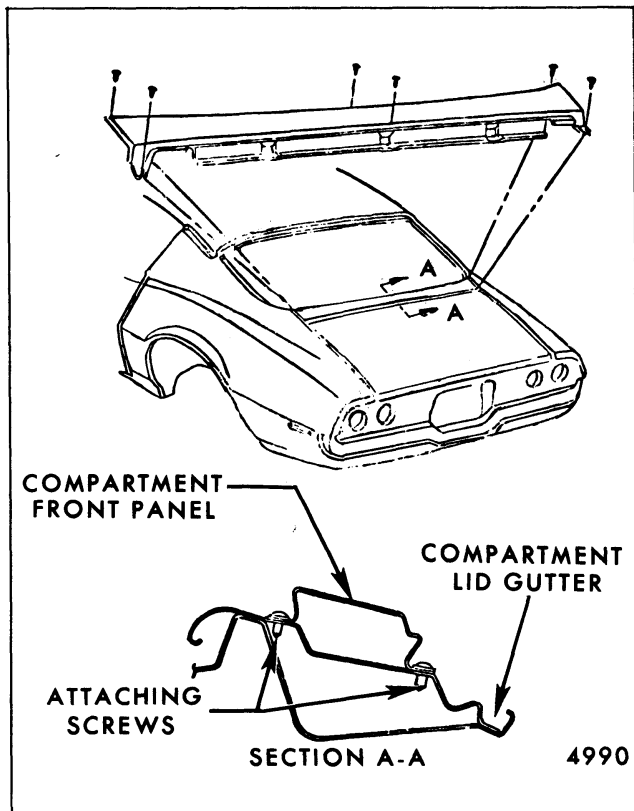


Fig. 7-32-Rear Compartment Front Panel - "F" Styles

3. Remove screws from upper edge of panel and remove panel.

**NOTE:** It may be necessary to cut away a small amount of adhesive caulking material used to seal back glass in order to locate and remove screws. Do not break adhesive caulk bond to rear window.

4. To install, reverse removal procedure.

## REAR END FINISHING PANEL - Pontiac "F" Styles

The rear end finishing panel is made of molded glass fiber plastic and retained by four attaching studs and nuts (Fig. 7-34).

### Removal and Installation

1. Remove tail lamp assemblies, license plate bracket, and rear bumper.
2. Remove four rear end finishing panel retainer nuts, and remove panel from body (Fig. 7-34).

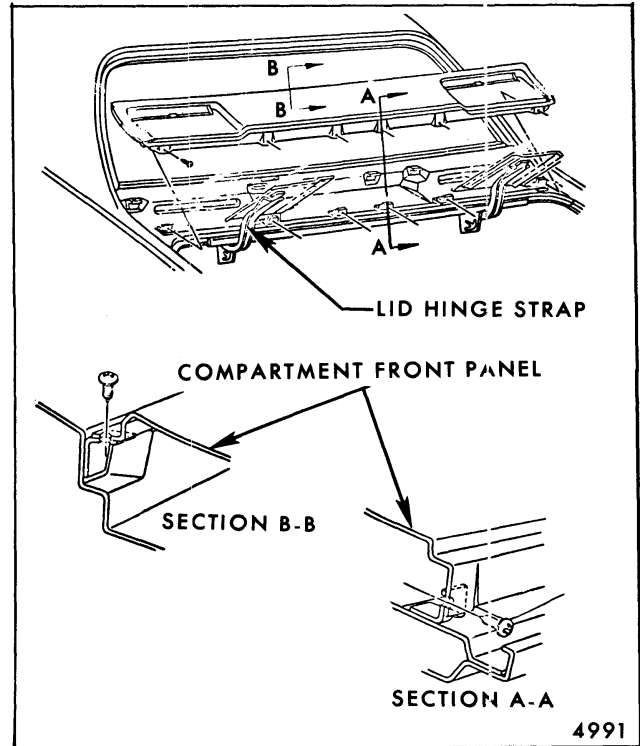


Fig. 7-33-Rear Compartment Front Panel - "E" Oldsmobile Style

3. To install, reverse removal procedure. Tighten finishing panel attaching nuts to a torque of 26-38 inch pounds.

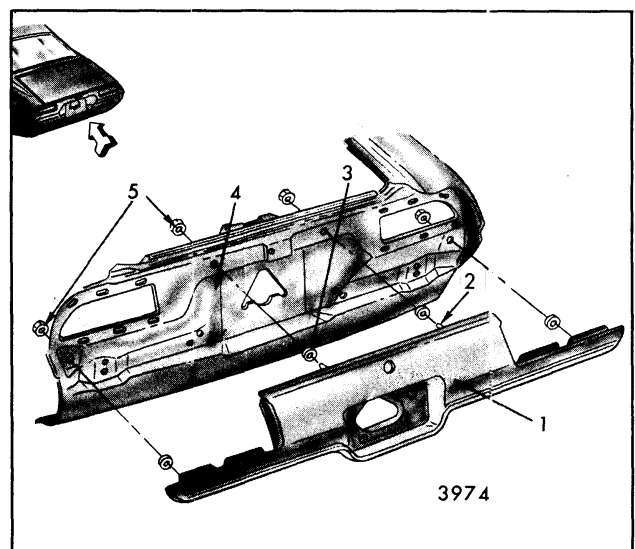


Fig. 7-34-Rear End Finishing - Pontiac "F" Styles

- |                             |                   |
|-----------------------------|-------------------|
| 1. Rear End Finishing Panel | 3. Washer         |
| 2. Finishing Panel Studs    | 4. Rear End Panel |
|                             | 5. Attaching Nuts |

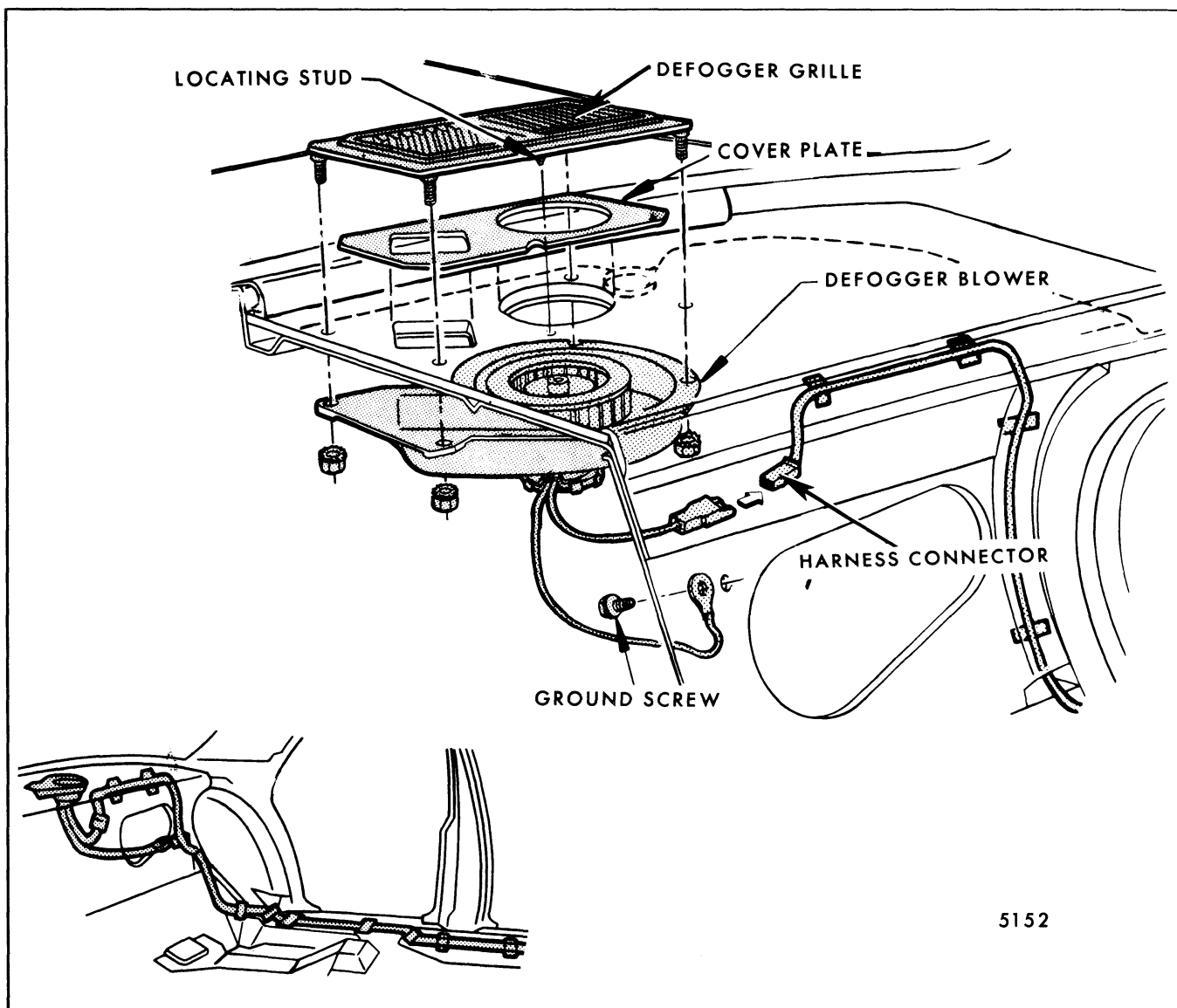


Fig. 7-35-Typical Defogger Blower Installation - "B" Style Shown - Other Styles Similar

## BACK WINDOW DEFOGGER (BLOWER TYPE)

### DESCRIPTION

Defogger blower motors that are mounted to either the rear seat back panel or rear seat back to back window panel are illustrated in this section. Refer to the Electrical Section for diagnostic procedure and electrical characteristics.

The blower motors can be removed from inside the rear compartment without trim removal except on Chevrolet "B-47" and Buick "E-87" styles which require rear seat back removal for blower attaching bolt access. Refer to Figures 7-35, 7-36, 7-37, 7-38 and 7-39 for typical defogger blower installations.

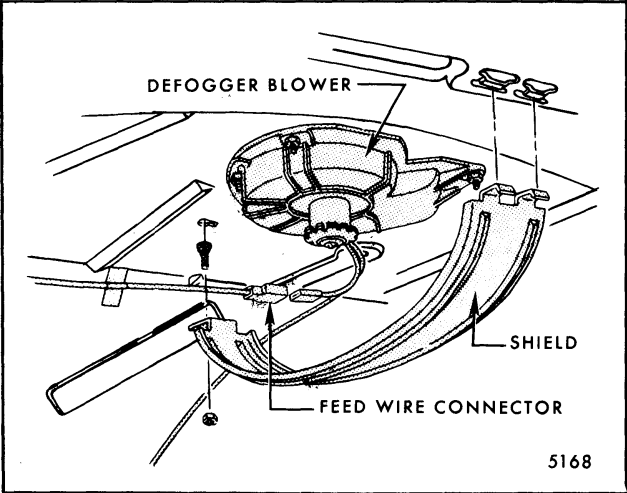


Fig. 7-36-Back Window Defogger Blower Shield - "A" Styles

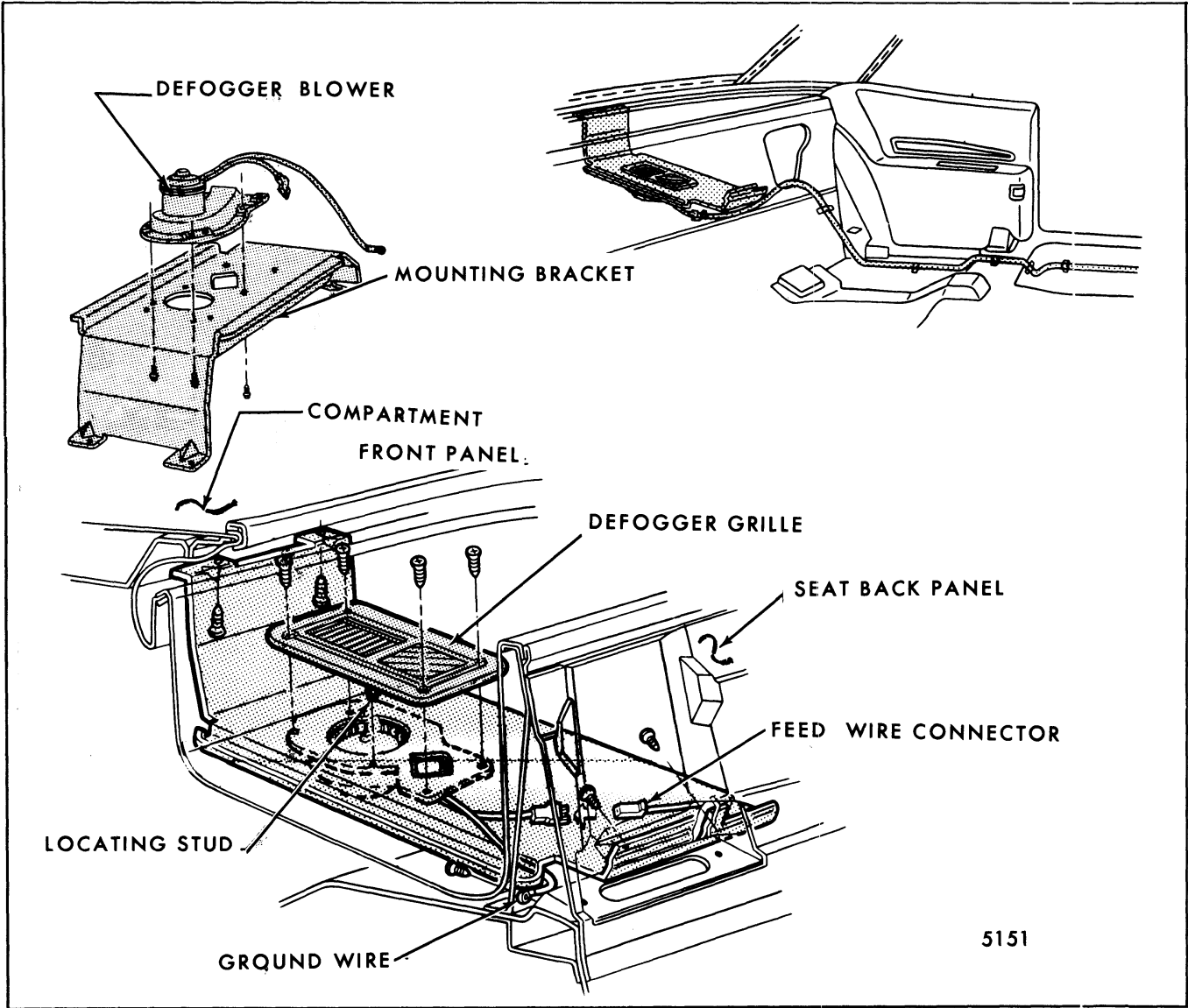


Fig. 7-37-Defogger Blower Installation - Chevrolet "B-67" Style Shown

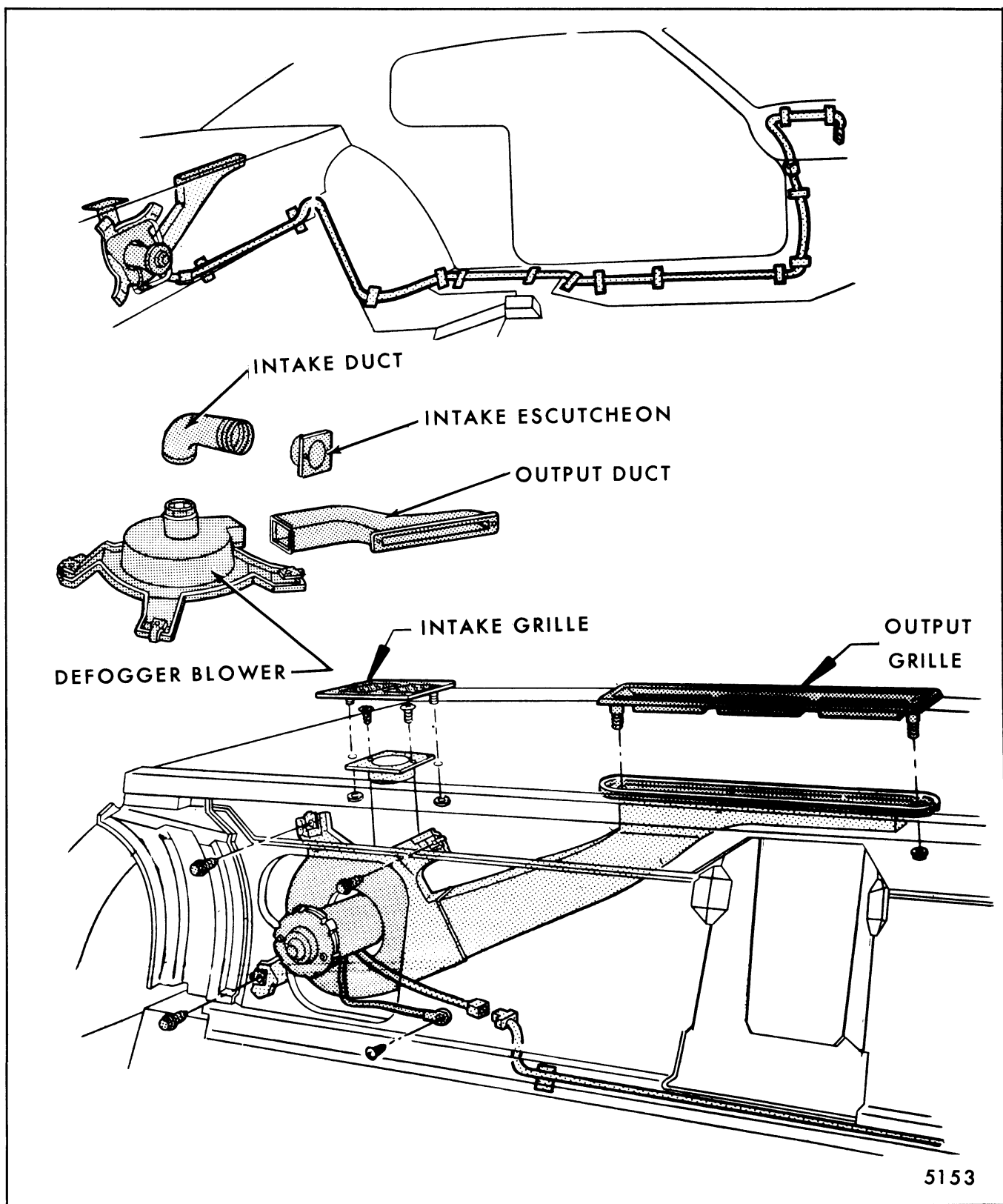
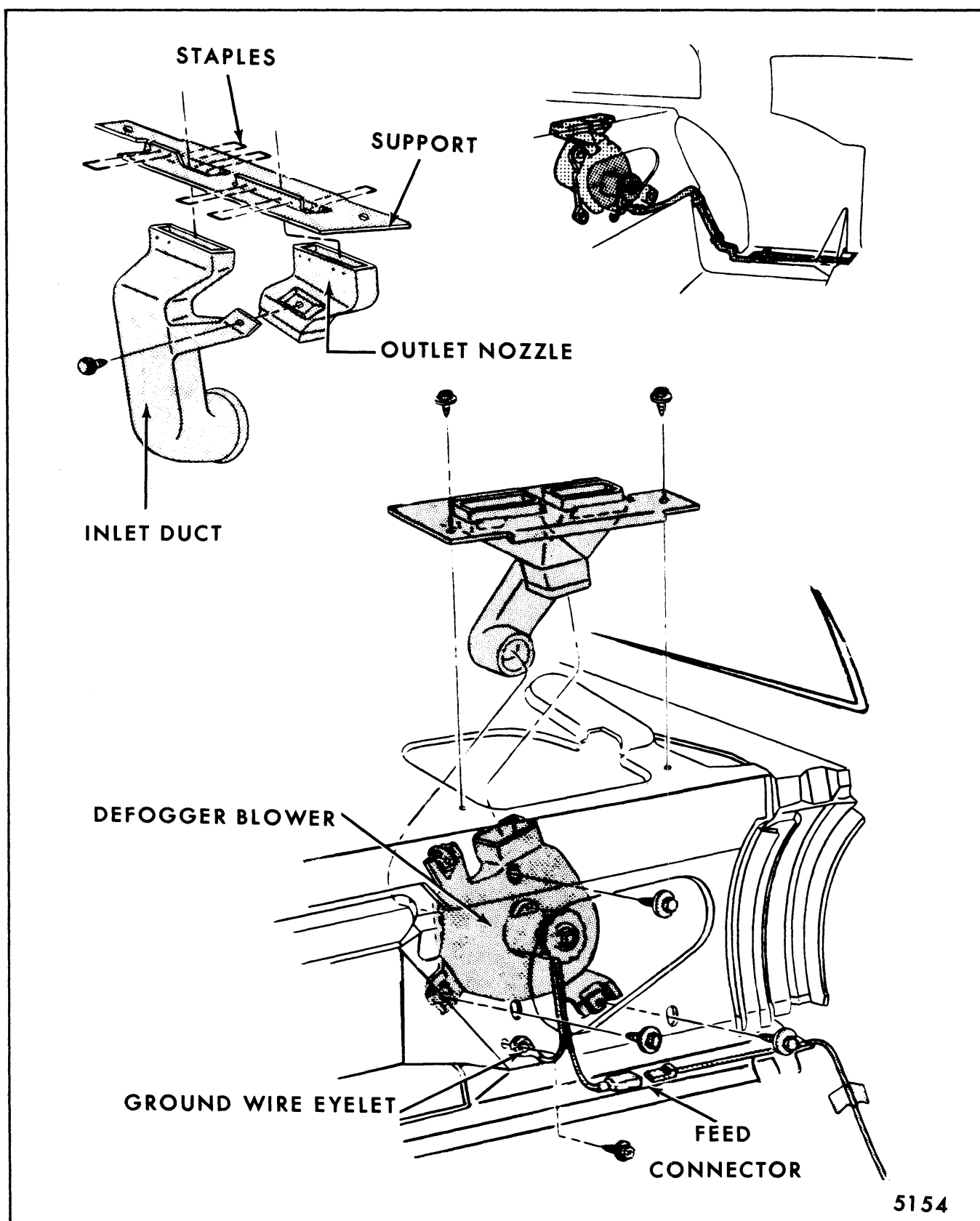


Fig. 7-38-Defogger Blower Installation - Chevrolet "B-47" Style



5154

Fig. 7-39-Defogger Blower Installation - Buick "E-87" Style

# FIBER OPTIC MONITOR SYSTEM - CADILLAC STYLES ONLY

## Description

The optional fiber optic system monitors tail, stop and directional lamp illumination from the passenger compartment.

Basically, fiber optic conductor which is approximately 1/16 inch in diameter, consists of a bundle of transparent acrylic strands covered with an opaque black vinyl coating. Light is reflected along each strand within the bundle and is unaffected by the

curves encountered during conductor routing. The ends of each bundle are cleanly cut and polished for maximum light transfer.

The conductor is routed along the rear quarter from the tail lamps to the monitor. The monitor is installed on the roof near the back window opening on all styles except convertibles which is mounted to the rear of the rear seat back upper. Refer to Figures 7-40, 7-41 and 7-42 for conductor routing as well as monitor and sender installations.

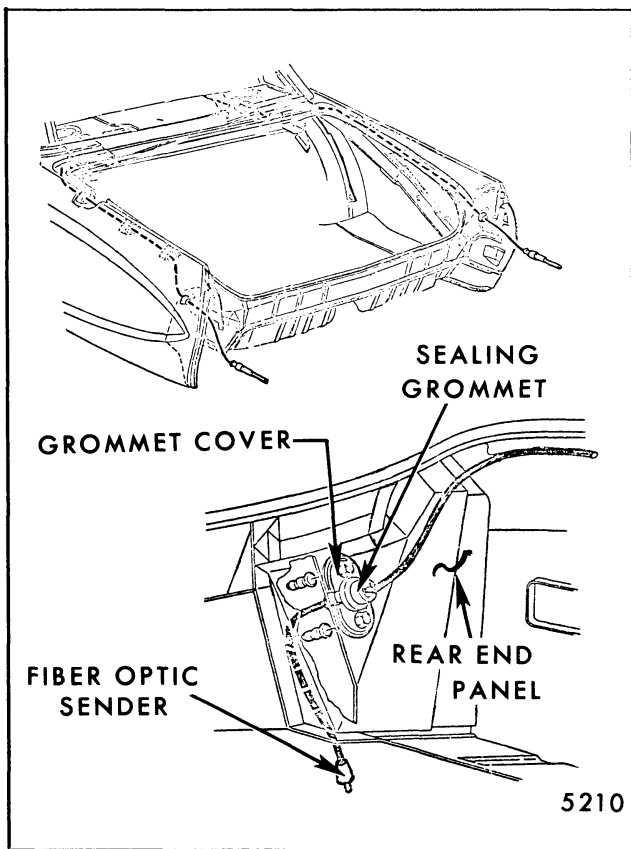


Fig. 7-40-Fiber Optic Routing - Cadillac "C" Styles

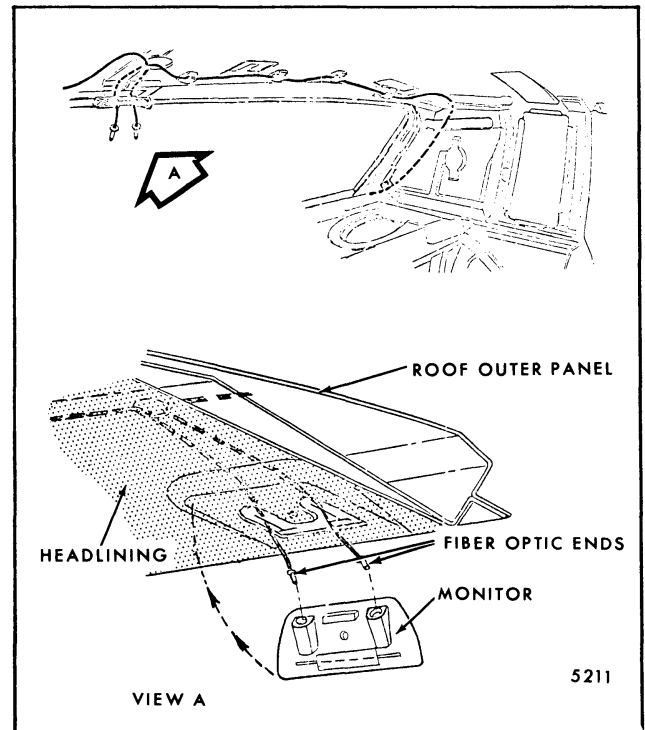


Fig. 7-41-Fiber Optic Monitor Installation - Cadillac "C-E" Styles, Except "E-67" Style

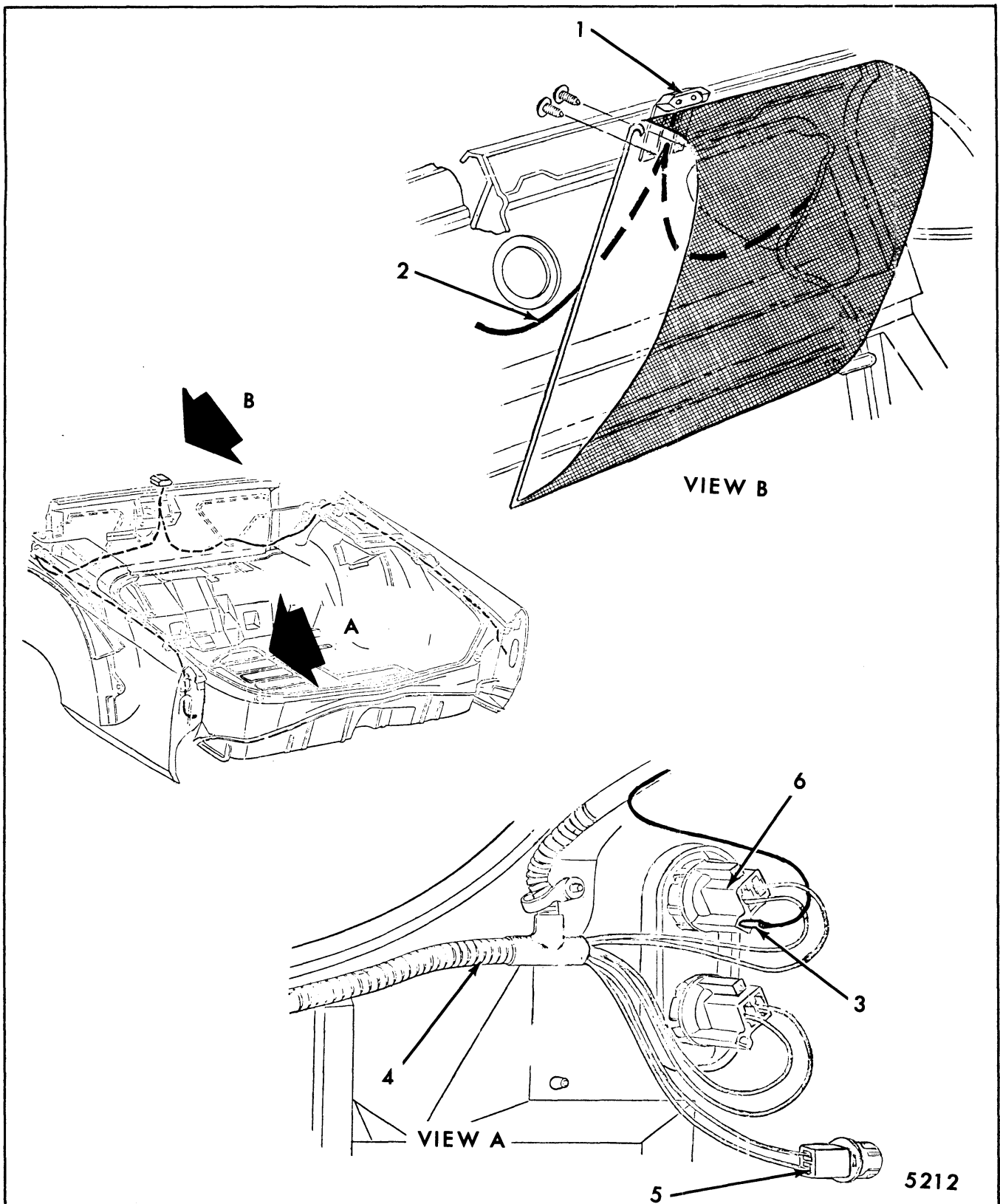


Fig. 7-42-Fiber Optic Monitor and Tail Lamp Sender Installation - Cadillac "E-67" Style

- |                     |   |                            |                     |
|---------------------|---|----------------------------|---------------------|
| 1. Monitor          | 3. Fiber Optic Sender - Inserts Into Tail Lamp Socket | 4. Tail Lamp Harness       | 6. Tail Lamp Socket |
| 2. Fiber Optic Wire |   | 5. Side Marker Lamp Socket |                     |



## EXTERIOR LAMPS

### TAIL LAMPS

Various methods are employed to remove and install the components of tail lamp assemblies. The following charts and illustrations, Figures 7-44 through 7-51, will provide a quick reference for performing the three basic service operations for each Car Division (Bulb Replacement, Lens Replacement and Housing Replacement) on styles where the tail lamp assembly is installed on the body. If the tail lamp assembly is installed in the bumper refer to the chassis manual for service operations.

**CAUTION:** Do not rework or alter the reflective surface of tail lamps or side marker lamps.

### EXTERIOR LAMP SEALING

Care should be exercised to prevent waterleaks at the tail lamp area when sealing surfaces are disturbed. Damaged gaskets should be replaced.

If new gaskets are not installed, the use of sealer (body caulking compound or equivalent) is recommended at critical areas and where the old gaskets have taken a set.

### SIDE MARKER LAMPS

All styles incorporate a rear quarter side marker lamp which operates in conjunction with the tail lamp circuit. Some styles use a "wrap around" tail lamp assembly which doubles as a side marker lamp.

There are two basic methods of retention for these lamp housings:

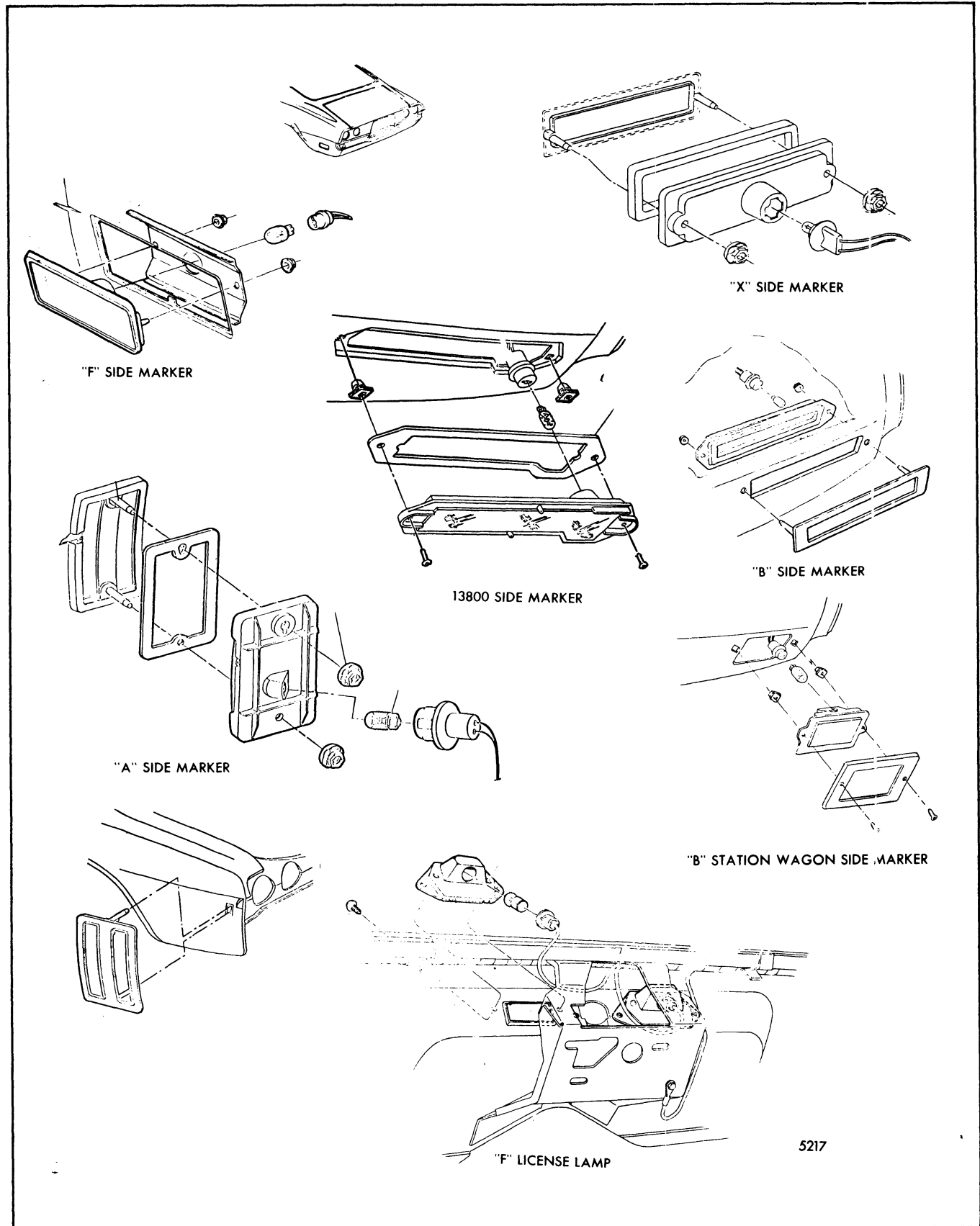
1. Studs with nuts accessible from the rear compartment.
2. External screws - used on all station wagons.

### COMPARTMENT FRONT PANEL LAMP (OLDSMOBILE "E" STYLES)

The lamp assemblies are mounted to integral studs on the back window drain panel and attached with nuts prior to installation of the applied rear compartment front panel.

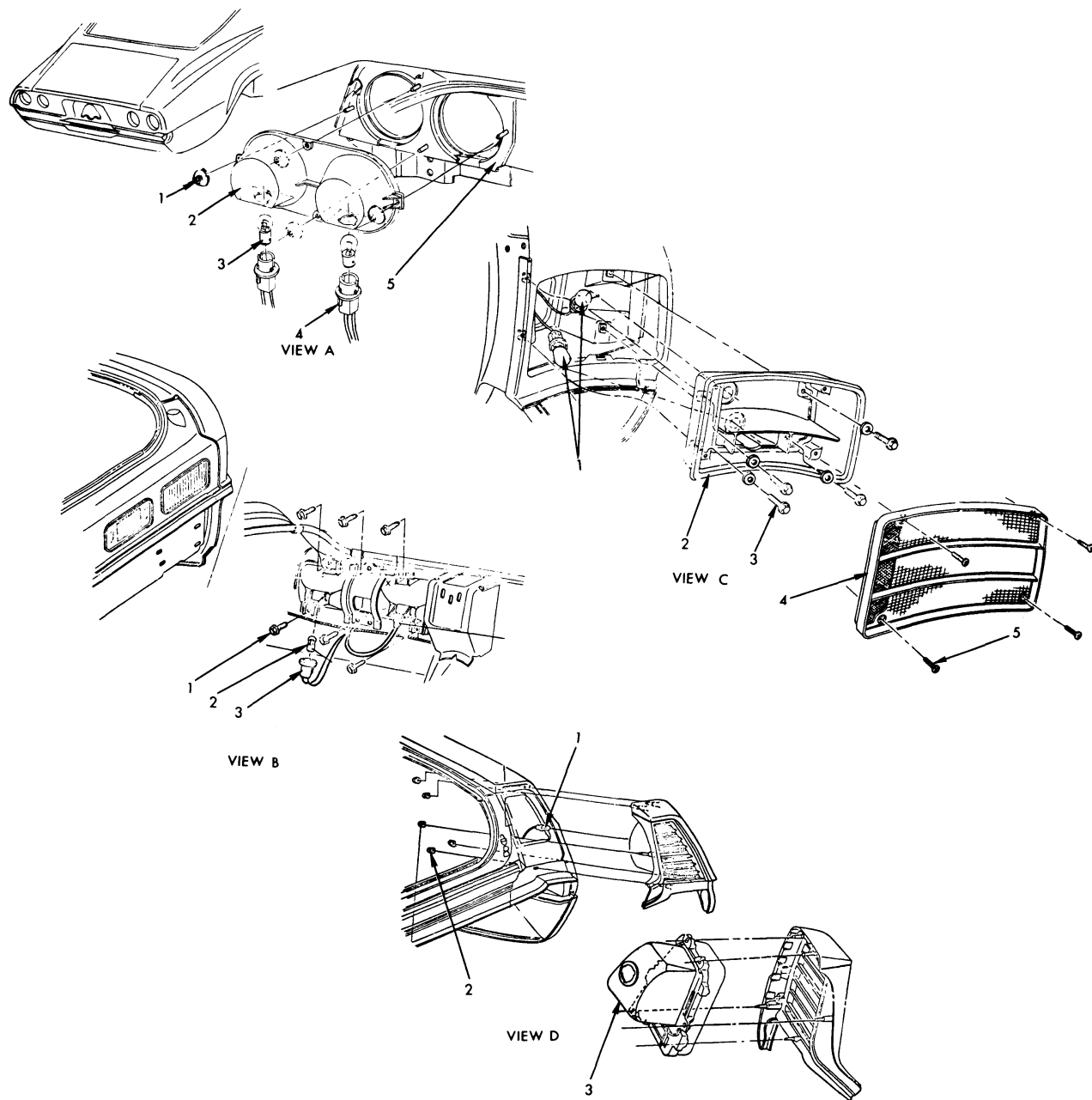
### OPERA LAMP (CADILLAC 6CB69 STYLE)

The lamp assembly mounted on the quarter panel sail area is attached with screws accessible under the screw attached lens.



5217

Fig. 7-43-Side Marker and License Lamp Installation - Chevrolet Styles



5218

Fig. 7-44-Tail Lamp Installation - Chevrolet Styles

OPERATION	METHOD	BODY TYPE			
		B Sta. Wgn.	F	X	1AH
Bulb Replacement	Remove Lens Outside	X			
	Remove Socket (Inside Rear Compartment)		X	X	X
Lens Replacement	Remove Retaining Screws (Outside)	X			
	Remove Housing and Disassemble		X	X	X
Housing Replacement	Remove From Outside (Retaining Nuts in Rear Compartment)			View B	View D
	Remove From Inside Rear Compartment		View A		
	Remove From Outside (Retaining Bolts Under Lens)	View C			
	Lower Rear Bumper				
5225					

Fig. 7-45-Tail Lamp Operation Chart - Chevrolet Syles

**View A - "F" Style Tail Lamp**

1. Retaining Nut
2. Lamp Housing
3. Bulb
4. Bulb Socket
5. Rear End Panel

**View C - "B-35,45" Style Tail Lamp**

1. Bulb
2. Lamp Housing
3. Housing Retainig Bolt
4. Lens
5. Lens Retaining Screw

**View D - 1AH Series Tail Lamp**

1. Bulb and Socket
2. Bezel Retaining Nut
3. Lamp Housing

**View B - "X" Style Tail Lamp**

1. Retaining Screw
2. Bulb
3. Bulb Socket

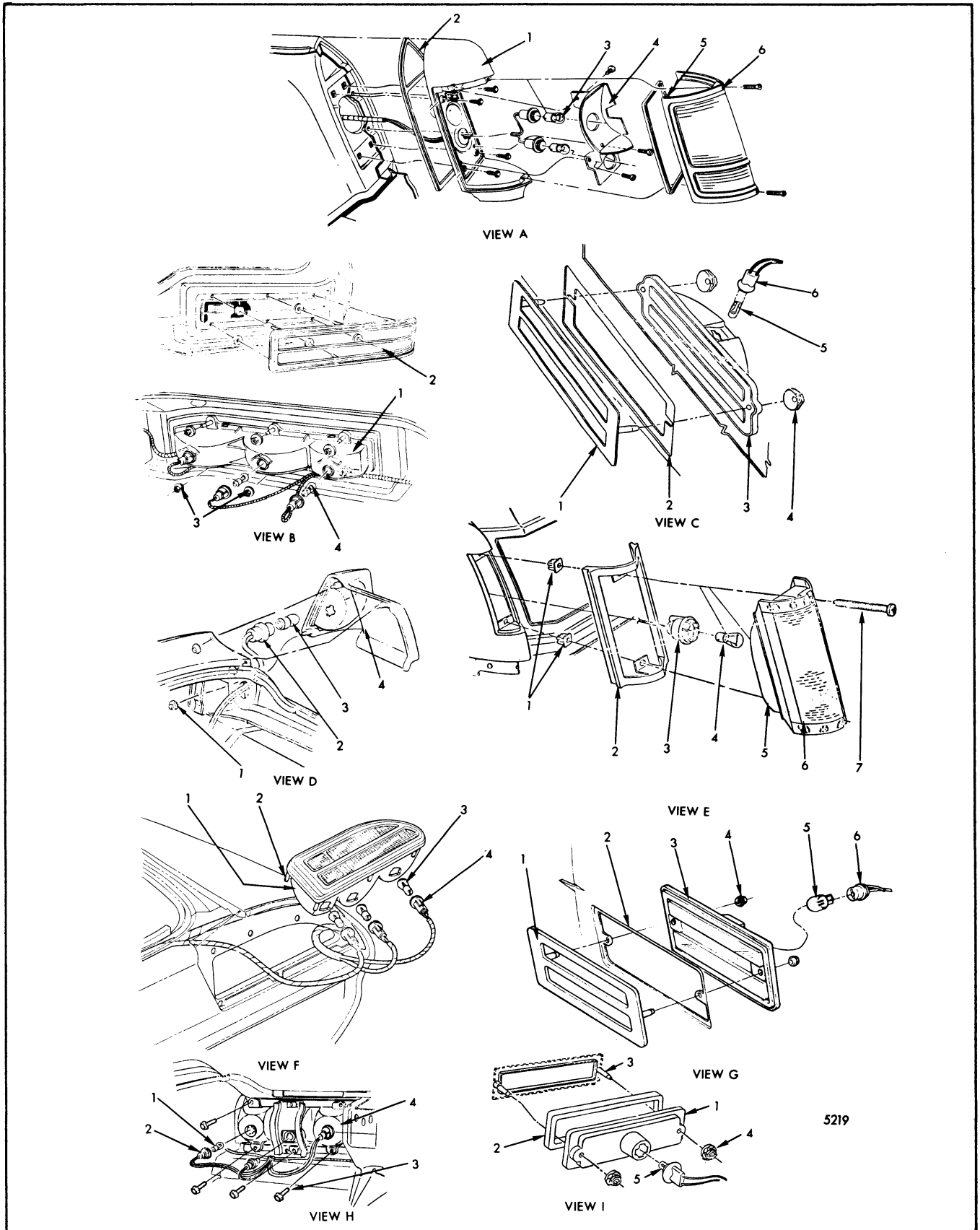


Fig. 7-46-Exterior Lamp Installation - Pontiac (U.S. and Canadian) Styles

OPERATION	METHOD	BODY TYPE				
		B Sta. Wgn.	B	2BP Series	F	X
Bulb Replacement	Remove Lens Outside	X				
	Remove Socket (Inside Rear Compartment)		X	X	X	X
Lens Replacement	Remove Retaining Screws (Outside)	X				
	Remove Housing and Disassemble		X	X	X	X
Housing Replacement	Remove From Outside (Retaining Nuts in Rear Compartment)					View H
	Remove From Inside Rear Compartment		View B	View B	View F	
	Remove From Outside Retaining Bolts Under Lens)	View A				
5307						

Fig. 7-47-Tail Lamp Operation Chart - Pontiac (U.S. and Canadian) Styles

#### View A - "B-35,45" Style Tail Lamp

1. Quarter Extension
2. Gasket
3. Bulb
4. Reflector
5. Lens Gasket
6. Lens

#### View D - 2GK57 Style Side Marker

1. Retaining Nut
2. Lamp Socket
3. Bulb
4. Lamp Housing and  
Quarter Extension

#### View G - "F" Style Side Marker

1. Bezel
2. Quarter Panel  
Opening
3. Lamp Housing
4. Retaining Nut
5. Bulb
6. Bulb Socket

#### View B - 2BL - 2BN - 2BP Typical Tail Lamp

1. Lamp Housing
2. Bezel
3. Housing Retaining  
Nut
4. Bulb

#### View E - 2BP Style Back-Up Lamp

1. Retaining Nut
2. Bezel
3. Bulb Socket
4. Bulb
5. Lamp Housing
6. Lens
7. Retaining Screw

#### View H - "X" Style Tail Lamp

1. Bulb
2. Bulb Socket
3. Retaining Screw
4. Lamp Housing

#### View C - "B" Styles Side Marker - Less "35-45" Styles

1. Bezel
2. Quarter Panel  
Opening
3. Lamp Housing
4. Retaining Nut
5. Bulb
6. Bulb Socket

#### View F - "F" Style Tail Lamp

1. Lamp Housing
2. Housing Studs (Part  
of Assembly)
3. Bulb
4. Bulb Socket

#### View I - "X" Style Side Marker

1. Lamp Housing
2. Gasket
3. Bezel
4. Retaining Nut
5. Bulb

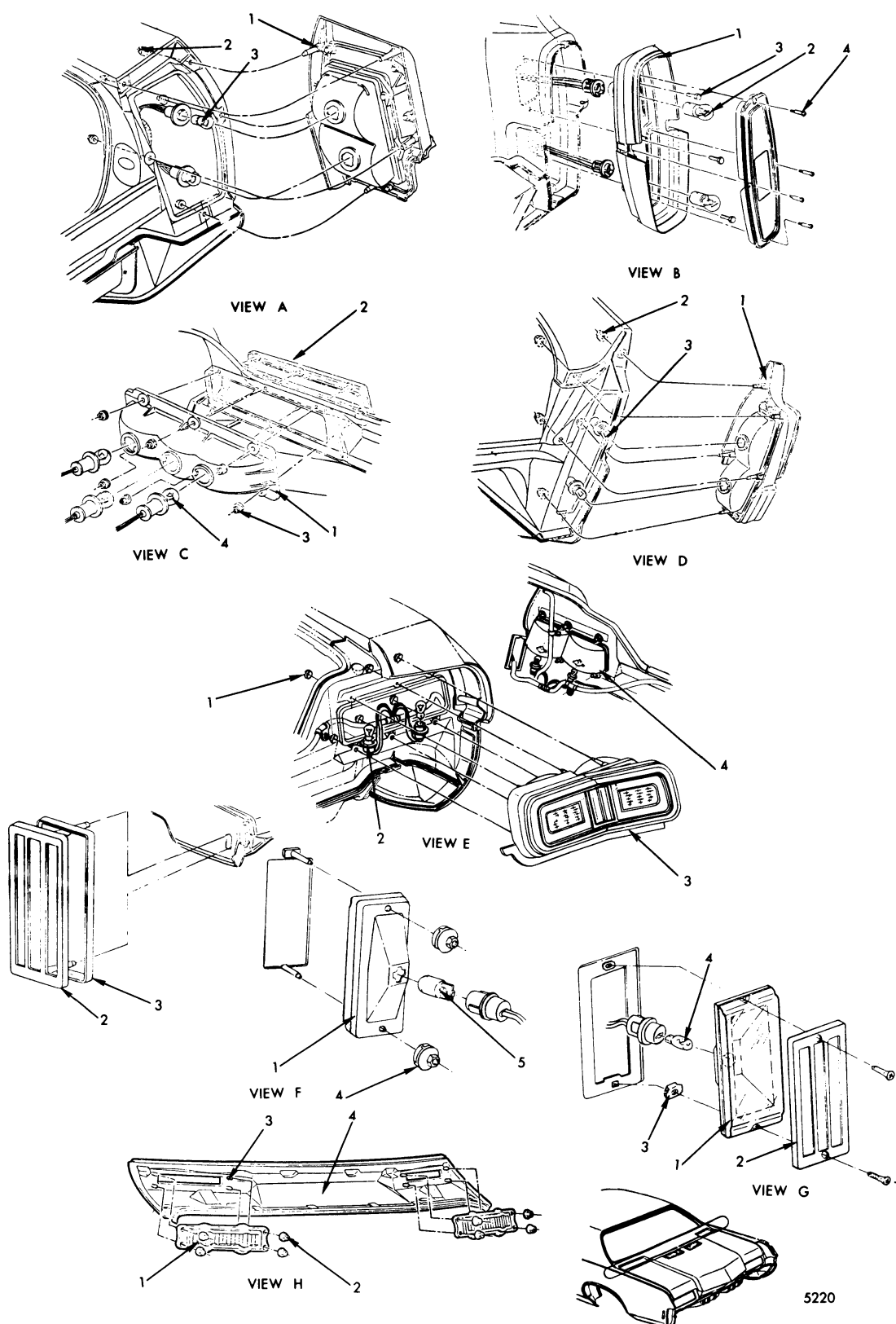


Fig. 7-48-Exterior Lamp Installation - Oldsmobile Styles

OPERATION	METHOD	BODY TYPE		
		B Sta. Wgn.	B - C	E
Bulb Replacement	Remove Lens Outside	X		
	Remove Socket (Inside Rear Compartment)		X	X
Lens Replacement	Remove Retaining Screws (Outside)	X		
	Remove Housing and Disassemble		X	X
Housing Replacement	Remove From Outside (Retaining Nuts in Rear Compartment)		View D & E	
	Remove From Inside Rear Compartment			View C
	Remove From Outside (Retaining Bolts Under Lens)	View B		
	Lower Rear Bumper	"B"	X	

**5223**

Fig. 7-49-Tail Lamp Operation Chart - Oldsmobile Styles

**View A - "A" Style Tail Lamp**

1. Lamp Housing and Quarter Extension
2. Retaining Nut
3. Bulb

**View D - "C" Style Tail Lamp**

1. Lamp Housing and Quarter Extension
2. Retaining Nut
3. Bulb

**View F - "A-B-C" Styles Side Marker - Less "B-35,45" ("C" Style Shown, "A-B" Similar)**

1. Lamp Housing
2. Bezel
3. Gasket
4. Retaining Nut
5. Bulb

**View B - "B-35,45" Style Tail Lamp**

1. Lamp Housing
2. Bulb
3. Lamp Housing Retaining Screw
4. Lens Retaining Screw

**View E - "B" Style Tail Lamp**

1. Lamp Housing Retaining Nut
2. Bulb and Socket
3. Lens
4. Lamp Housing

**View G - "B-35,45" Style Side Marker**

1. Lamp Housing
2. Bezel
3. Retaining Nut
4. Bulb

**View C - "E" Style Tail Lamp**

1. Lamp Housing
2. Bezel
3. Retaining Nut
4. Bulb

**View H - "E" Style Rear Compartment Front Panel Lamp**

1. Lamp Assembly
2. Retaining Nut
3. Studs on Panel
4. Body Panel



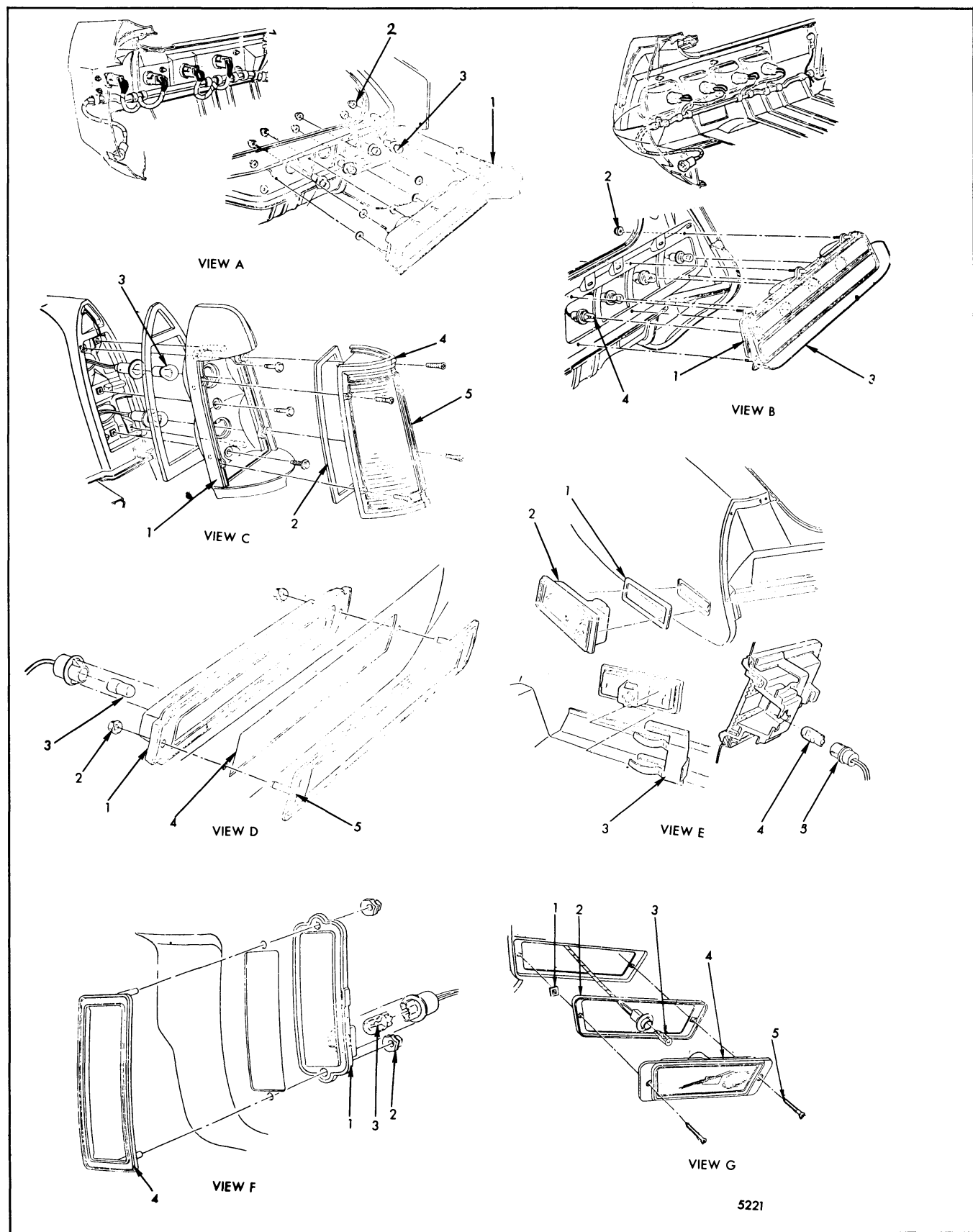


Fig. 7-50-Exterior Lamp Installation - Buick Styles

OPERATION	METHOD	BODY TYPE		
		B Sta. Wgn.	B - C	E
Bulb Replacement	Remove Lens Outside	X		
	Remove Socket (Inside Rear Compartment)		X	X
Lens Replacement	Remove Retaining Screws (Outside)	X		
	Remove Housing and Disassemble		X	X
Housing Replacement	Remove From Outside (Retaining Nuts in Rear Compartment)		View A & B	
	Remove From Inside Rear Compartment			X
	Remove From Outside (Retaining Bolts Under Lens)	View C		

5224

Fig. 7-51-Tail Lamp Operation Chart - Buick Styles

**View A - "C" Style Tail Lamp**

1. Lamp Assembly
2. Retaining Nut
3. Bulb

**View E - "A" Style Side Marker**

1. Gasket
2. Lamp Housing
3. Retainer
4. Bulb
5. Socket

**View B - "B" Style (Except "B-35,45") Tail Lamp**

1. Lamp Assembly
2. Retaining Nut
3. Filler Rear End Panel  
to Bumper
4. Bulb

**View F - "E" Style Side Marker**

1. Lamp Housing
2. Retaining Nut
3. Bulb
4. Bezel

**View C - "B-35,45" Style Tail Lamp Less "B-35,45"**

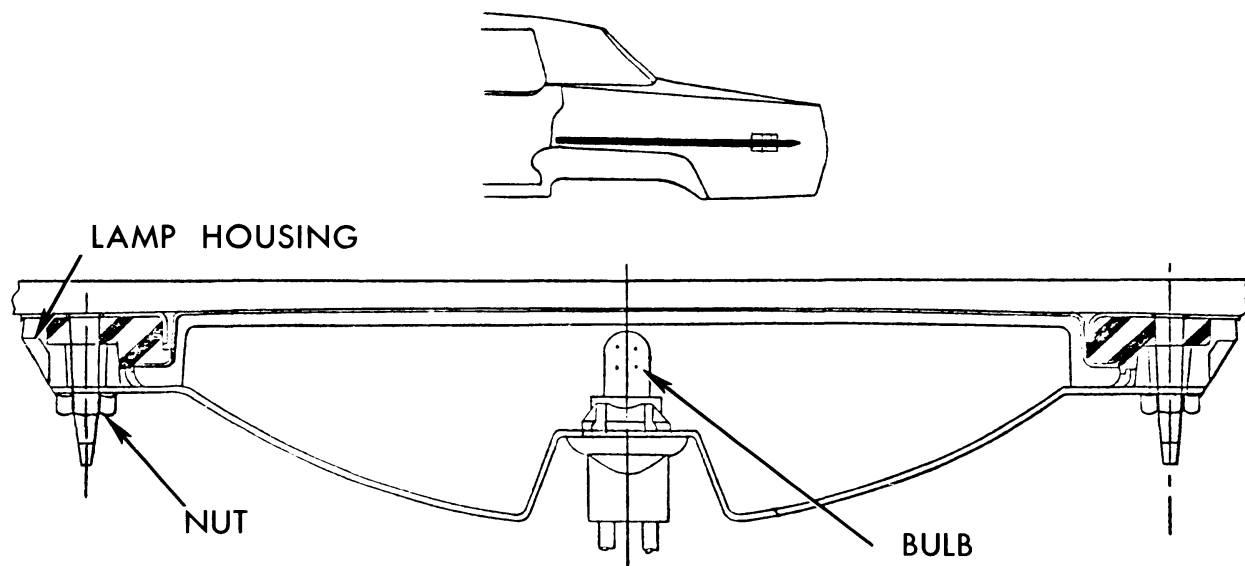
1. Lamp Housing
2. Gasket
3. Bulb
4. Bezel
5. Lens

**View G - "A-35" Style Side Marker**

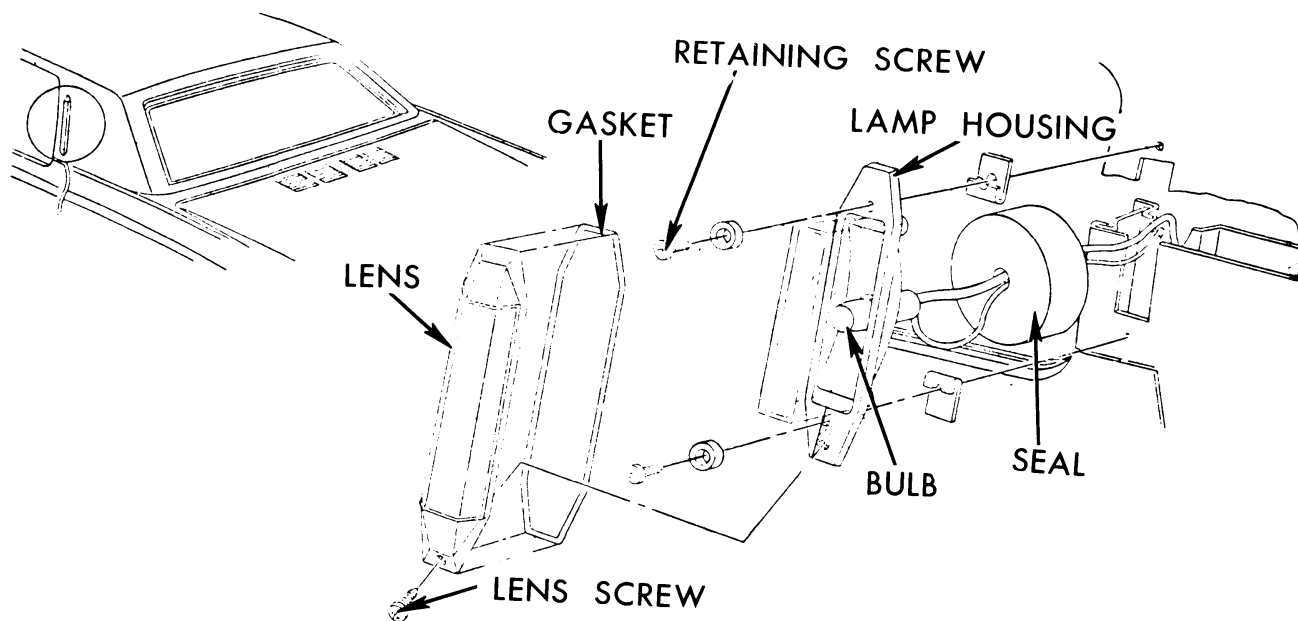
1. Retaining Nut
2. Gasket
3. Bulb
4. Lamp Housing
5. Screw

**View D - "B-C" Style Side Marker -  
Styles**

1. Lamp Housing
2. Retaining Nut
3. Bulb
4. Quarter Outer Panel
5. Bezel



SIDE MARKER LAMP - ALL STYLES



OPERA LAMPS-6CB69 STYLE

5222

Fig. 7-52-Exterior Lamp Installation - Cadillac Styles

## STATION WAGON TAIL GATE - "A-35" STYLE

### DESCRIPTION

The "A" style tail gate consists primarily of an inner panel, outer panel and an adhesive caulked stationary glass. It is hinged at the top of the back body opening and secured by means of a striker-lock combination at the bottom of the opening. The gate is unlocked with the ignition key inserted into a lock cylinder at the lower center area of the tail gate outer panel. An instrument panel mounted UNLOCK button which functions only with the ignition "ON" and

the transmission in "Park or Neutral" is standard on three seat models and optional on two seat models. Once unlocked, the gate can be raised from the rear of the vehicle.

Tubular counterbalance support assemblies attached to the sides of the tail gate provide both a opening assist and "hold-open" feature. An instrument panel warning lamp will be illuminated if the gate is not fully closed and the ignition switch "ON".

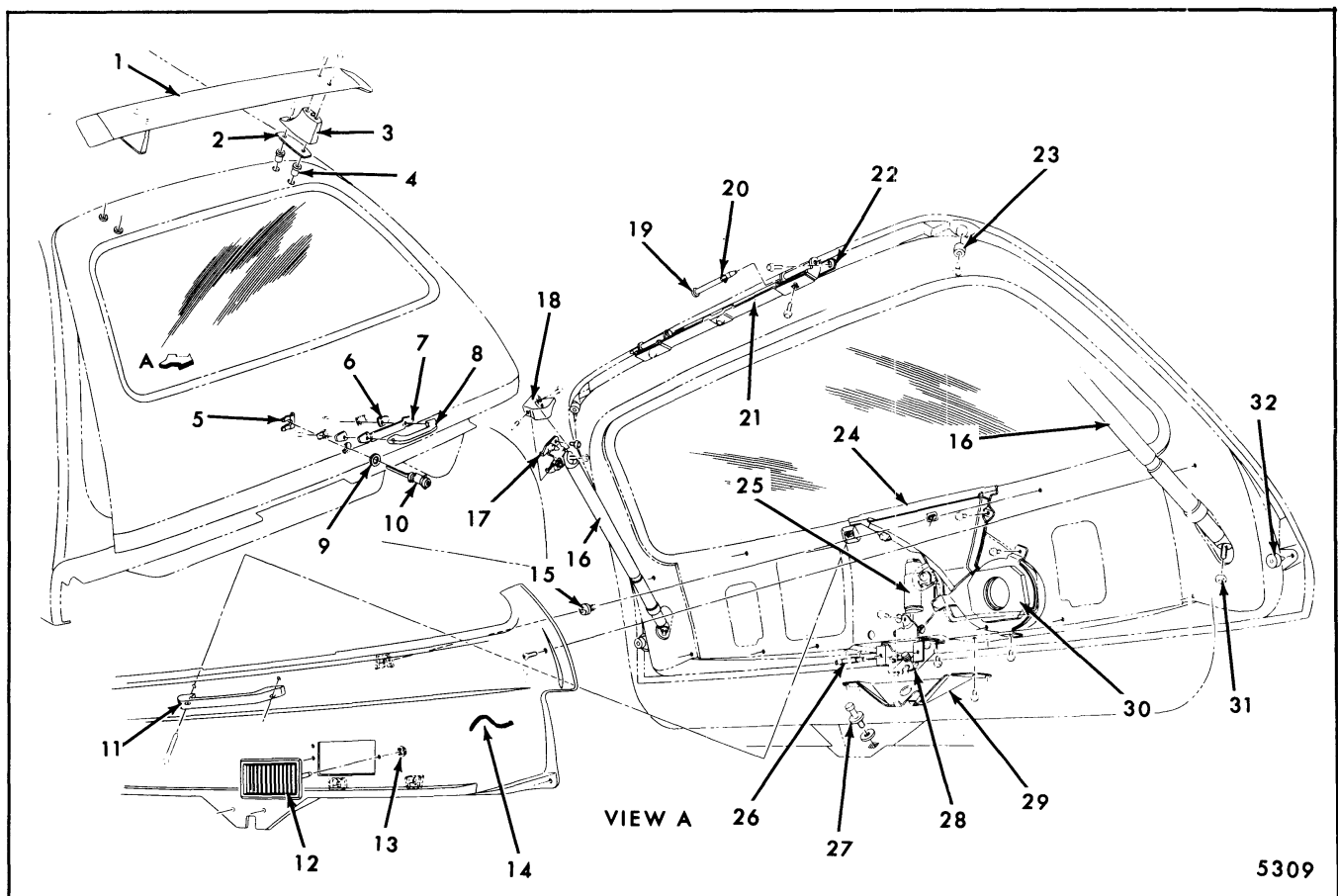


Fig. 7-53-Tail Gate Hardware

- |                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| 1. Wind Deflector       | 9. Lock Cylinder Gasket | 20. Hinge Pin Retaining | 26. Warning Lamp Jamb   |
| 2. Deflector Support    | 10. Lock Cylinder       | Ring                    | Switch                  |
| 3. Wind Deflector       | 11. Inside Pull Handle  | 21. Body Side Hinge     | 27. Lock Striker        |
| Support                 | 12. Defogger Grille     | Strap                   | 28. Lock Assembly       |
| 4. Deflector Anchor Nut | 13. Grille Nut          | 22. Gate Side Hinge     | 29. Lock Assembly Cover |
| 5. Lock Cylinder        | 14. Inner Cover Panel   | Strap                   | 30. Defogger Blower     |
| Retainer                | 15. Fastener            | 23. Upper Corner        | 31. Torque-Tight Nut    |
| 6. Handle Gasket        | 16. Counterbalance      | Bumper                  | 32. Lower Corner        |
| 7. Handle Excutechon -  | Support Assembly        | 24. Defogger Duct       | Bumper                  |
| Transfer Option Only    | 17. Pillar Anchor Plate | Assembly                |                         |
| 8. Tail Gate Outside    | 18. Upper Support       | 25. Lock Release        |                         |
| Handle                  | Assembly Cover          | Solenoid                |                         |
|                         | 19. Hinge Pin           |                         |                         |

5309

# BACK BODY OPENING WEATHERSTRIP

## Description

A one piece weatherstrip seals the tail gate along both sides and across the top of the back body opening. At the top of the opening, the weatherstrip is cemented into a weld-on retainer. Nylon fasteners are a component part of the weatherstrip and secure the weatherstrip along the sides of the opening by engaging piercings in the back body pillar. Serrations on the fasteners retain the fastener into the piercings and seal the openings from water entry. In addition, a bead of weatherstrip cement is applied between the outboard surface of the weatherstrip and the vertical wall of the back body pillar along each side of the back body opening, as well as beneath the lower end of the weatherstrip (Fig. 7-54).

To disengage nylon fasteners from the back body pillar piercings, use tool J-21104 or equivalent. This

tool permits removal of the weatherstrip without fastener damage so that the weatherstrip can be reinstalled. Although replacement weatherstrip will include fasteners, individual fasteners are available as service parts.

## Removal

1. Use a flat-bladed tool to break cement bond between pillar and weatherstrip along sides of back body opening.
2. Disengage fasteners from pillar using tool J-21104 or equivalent.
3. Carefully peel weatherstrip from pillar beginning at lower corner toward retainer at upper radius and repeat on opposite side.

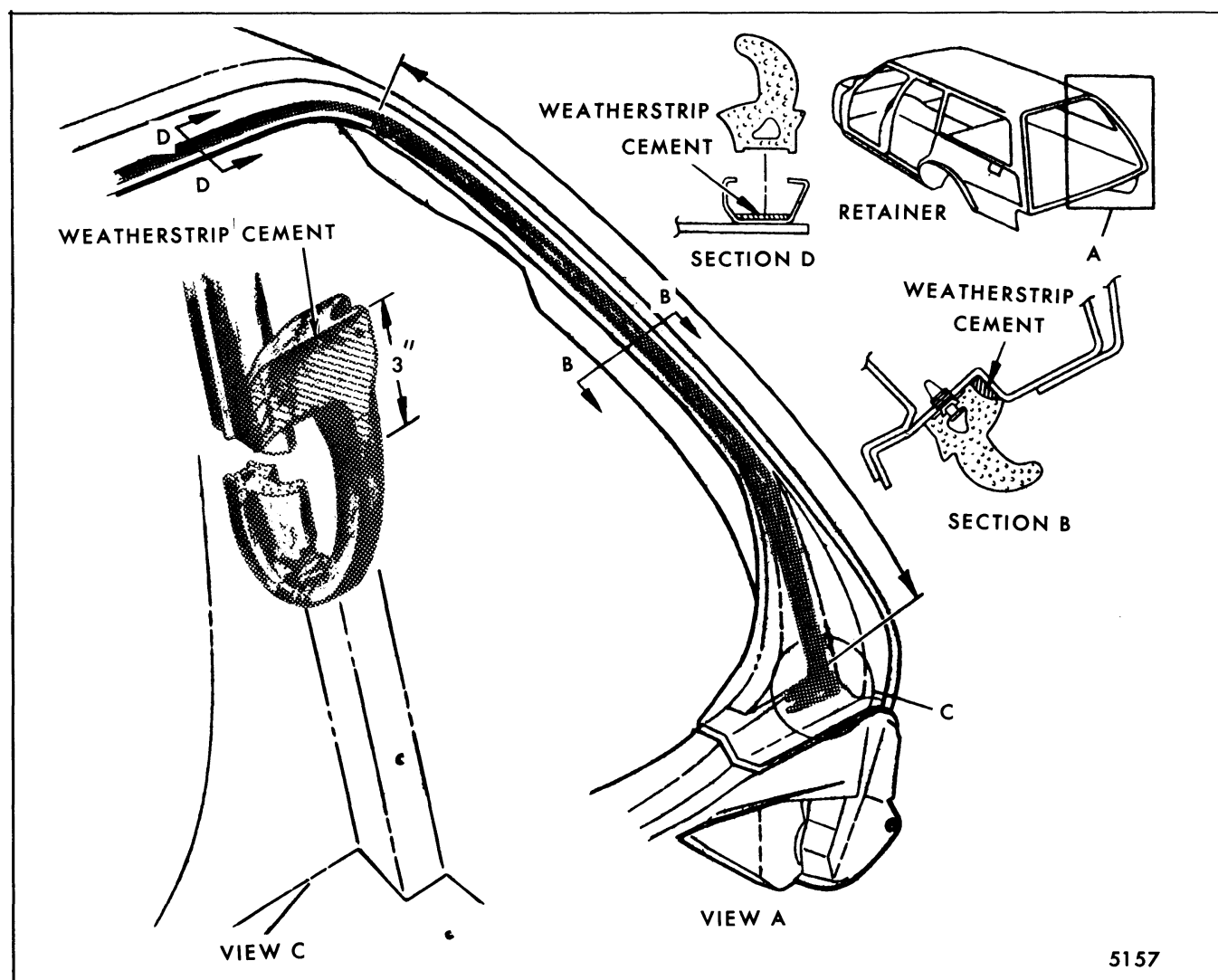


Fig. 7-54-Back Body Opening Weatherstrip Installation

**NOTE:** Use a flat-bladed tool to break bond of any remaining cement while peeling weatherstrip from opening.

4. Peel weatherstrip from retainer along top of opening using a flat-bladed tool to separate cement bond between weatherstrip and retainer.

### Installation

1. If previously removed weatherstrip is to be reinstalled, inspect nylon fasteners and replace those that are damaged and remove remnant of old cement.
2. Remove old weatherstrip cement from retainer and back body pillar.
3. Apply weatherstrip cement to base of retainer at top of opening.
4. Locate upper weatherstrip fasteners (each side) to uppermost piercings and insert weatherstrip into retainer as shown in Figure 7-54.
5. Continue inserting fasteners into pierced holes down both back body pillars.

**NOTE:** If required, tap nylon fasteners into piercings with a hammer and blunt caulking tool.

6. Apply cement to lower end of weatherstrip and secure by driving one loose nylon fastener (repeat at opposite side).

7. Flow a bead of weatherstrip cement between the outboard surface of the weatherstrip and vertical wall of the back body pillar along each side.

**NOTE:** Although weatherstrip cement is specified at certain locations, it can be used at any point where additional retention or sealing is required. For example, if weatherstrip becomes damaged at fastener location and will not retain fastener, discard fastener and secure weatherstrip to pillar with cement.

## TAIL GATE LOWER WEATHERSTRIP

### Description

The lower section of the back body opening is sealed by the tail gate lower weatherstrip. The seal is formed by compressing the weatherstrip to the rear end panel and to the "ramped" surface of the back body opening weatherstrip end details by the closing action of the tail gate. Serrated nylon fasteners are a component part of the weatherstrip and are used to secure it to the lower section of the tail gate (Fig. 7-55).

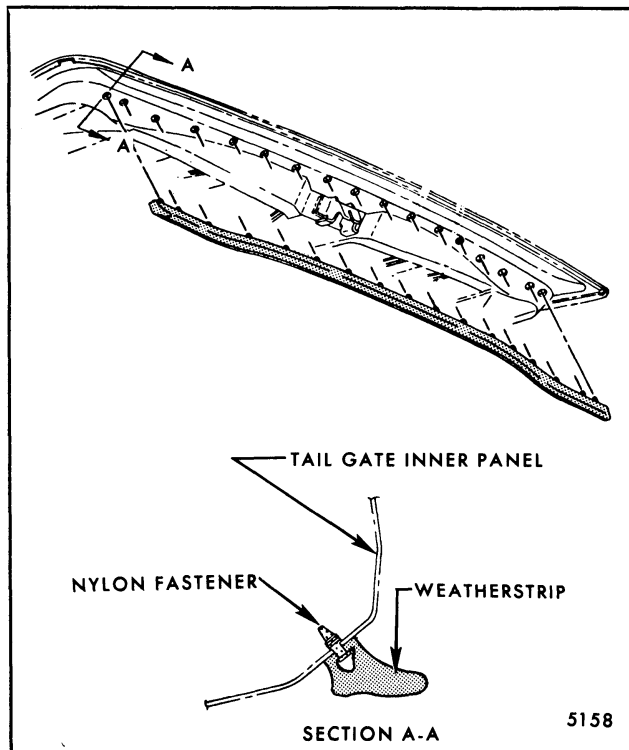


Fig. 7-55-Tail Gate Lower Weatherstrip Installation

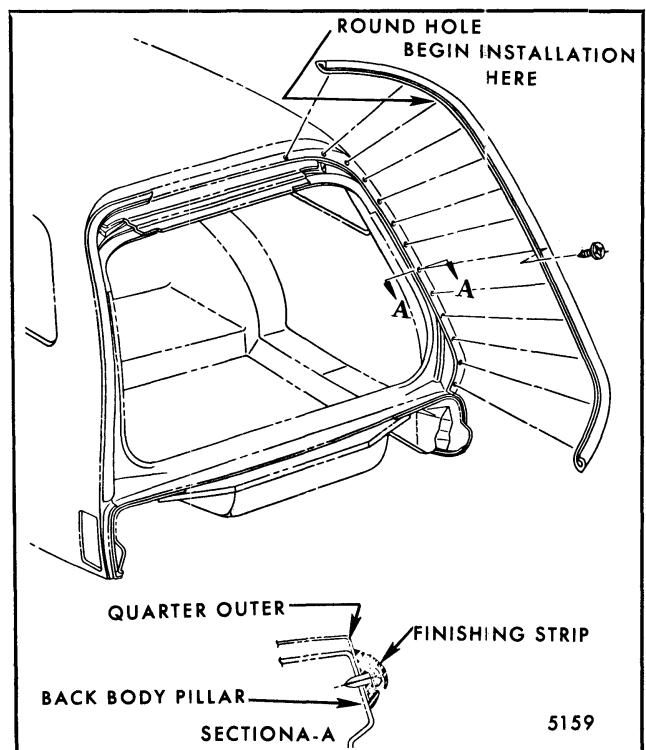


Fig. 7-56-Back Body Opening Finishing Strip

# Removal and Installation

1. Using tool J-21104 or equivalent, disengage fasteners from tail gate piercings and remove weatherstrip.
2. To install, align weatherstrip (sealing lip rearward - Section A-A, Fig. 7-55) fasteners to piercings in tail gate panel and press into position.

**NOTE:** If weatherstrip becomes damaged at fastener location and will not retain fastener, discard fastener and secure weatherstrip to tail gate with cement.

# BACK BODY OPENING FINISHING STRIP

## Description

The back body opening finishing strip is constructed of a black rubber like material. The strip is secured to the rear edge of the quarter panel adjacent to the tail gate. It follows the upper radius of the back body opening, down along the outboard edge of the tail gate to the rear end panel. It serves to close-out the gap that is required between the sides of the tail gate and the quarter panel. Since roof to tail gate gap is minimal, no finishing strip is required across the top of the opening. The finishing strip is designed so as to conceal the screws used in attaching it to the quarter panel (Fig. 7-56).

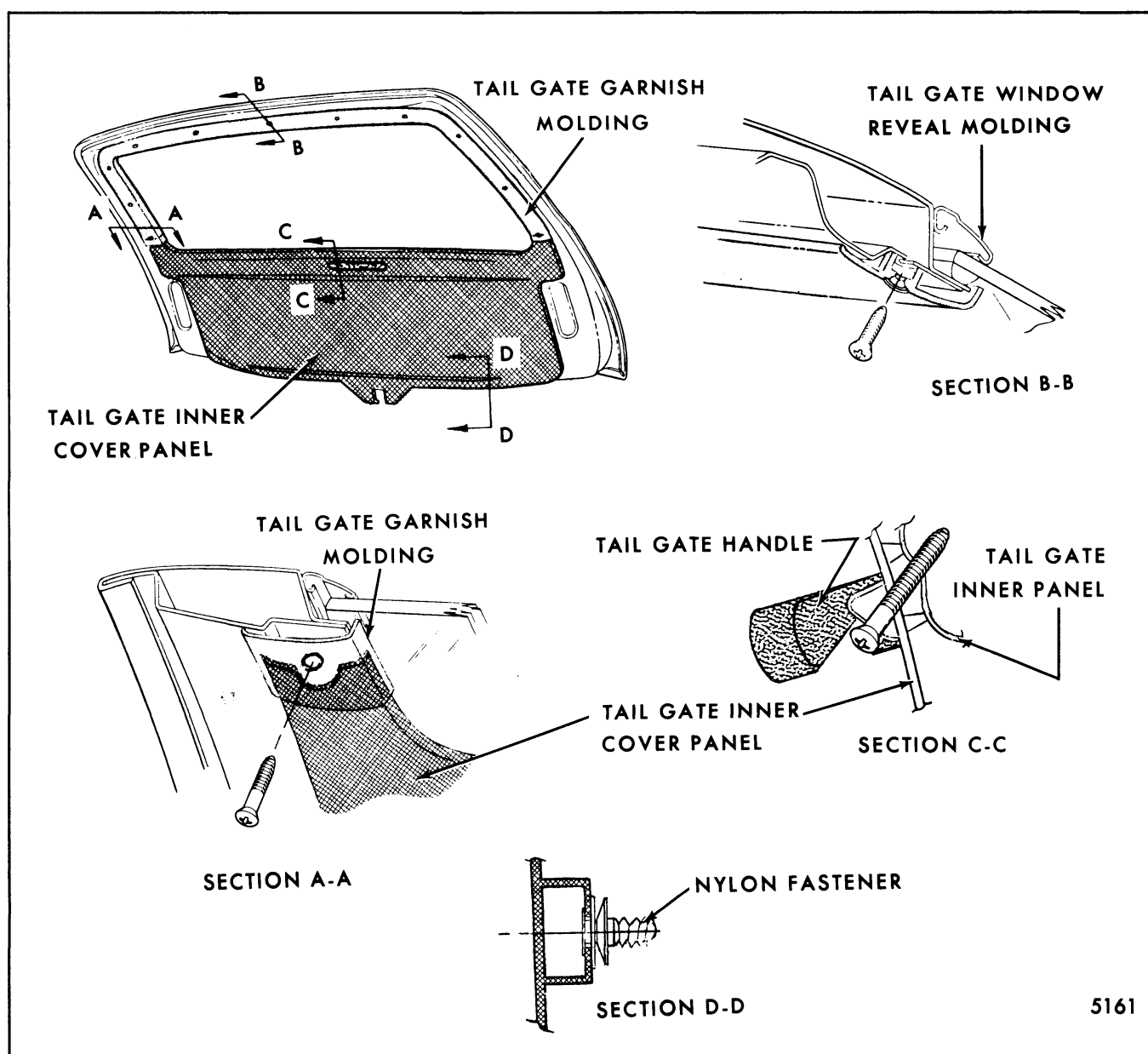


Fig. 7-57-Tail Gate Inner Cover Panel and Tail Gate Window Garnish Molding

### Removal and Installation

1. Lift outer lip of finishing strip to expose attaching screws and remove. Repeat on opposite side if required.
2. To install, reverse removal procedure.

**NOTE:** Begin installation at round hole near top of finishing strip.

## TAIL GATE WINDOW GARNISH MOLDING

### Description

A one piece plastic garnish molding is used around the tail gate window opening above the belt line (Fig. 7-57). It is secured to the tail gate inner panel with exposed screws. It is designed to conceal the tail gate window pinchweld and "finish" the area immediately adjacent to the glass.

### Removal and Installation

1. Remove screws securing garnish molding to inner panel and remove.
2. To install, position garnish molding to overlap upper ends of tail gate inner cover panel and drive one upper screw to hold molding.
3. Finish by driving remaining screws.

## TAIL GATE INNER COVER PANEL

### Description

The tail gate inner cover panel is used to conceal the lower tail gate window pinchweld flange and to finish the lower half of the tail gate inner panel. It is secured to the inner panel by a series of "push-on" fasteners and exposed screws. An inside pull handle is mounted at tail gate centerline just below the tail gate window opening (Fig. 7-57).

### Removal and Installation

1. Remove screws securing inside pull handle to tail gate inner panel and remove handle (Section C-C, Fig. 7-57).
2. Remove screws from inner cover panel at outboard corners and at lock reinforcement (bottom center of tail gate). Also lower attaching screws on garnish molding if not previously removed.
3. Using trim pad remover tool J-9886 or equivalent, disengage cover panel "push-on" fasteners

from inner panel along bottom edge of cover panel (Section D-D, Fig. 7-57).

4. Grasp cover panel along the sides and lift upwards (telescoping upper cover panel corners beneath lower ends of garnish molding) until cover panel becomes disengaged from upper fasteners just below window opening.
5. Hold cover panel away from tail gate inner panel and pull downward to remove from beneath garnish molding.
6. To install, reverse removal procedure.

**NOTE:** Remove clips from inner panel holes and replace in cover. Snap cover on with clips in place, locate cover and drive screws to replace.

## TAIL GATE LOCK COVER

### Description

The tail gate lock cover is secured by screws to the bottom of the tail gate (Fig. 7-58). Its function is to conceal and protect the tail gate lock mechanism and warning light jamb switch from accidental abuse.

### Removal and Installation

1. Remove screws securing lock cover to underside of tail gate and remove cover.
2. To install cover, reverse removal procedure making sure switch insulator is in place to prevent grounding against cover.

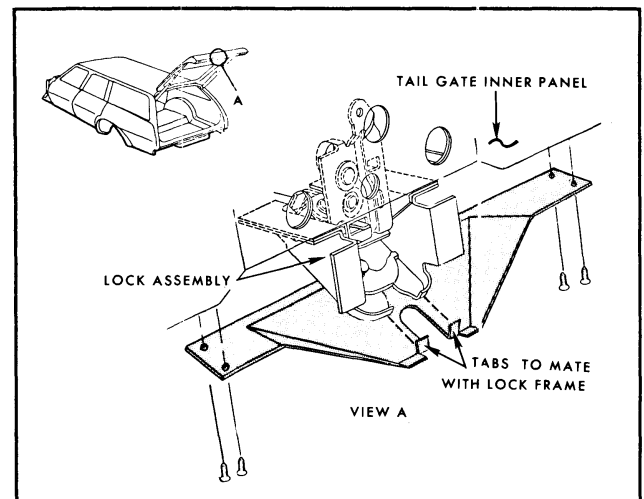


Fig. 7-58-Tail Gate Lock Cover



## TAIL GATE OUTSIDE PULL HANDLE

### Description

A zinc die cast outside pull handle is mounted on the tail gate outer panel near the bottom center of the gate (Fig. 7-59). Its function is to afford a means of lifting the gate from the "unlocked" position (gate partially opened) to a point where the counterbalance support tubes can complete the opening cycle unassisted. Small indexing studs which are an integral part of the handle insure correct installation.

### Removal and Installation

1. Remove tail gate inner cover panel as previously described.
2. Reaching through inner panel tool access hole, remove bolts securing handle to outer panel and remove.
3. To install, reverse removal procedure.

**NOTE:** Align escutcheon (wood grain transfer only) or gaskets with indexing studs and outer panel prior to driving bolts that secure handle.

## TAIL GATE LOCK CYLINDER

### Description

The tail gate lock cylinder is mounted on the tail gate outer panel between the outside handle and the bot-

tom of the gate. It is secured to the outer panel by a slide-on retainer inboard of the outer panel. The lock is actuated by the ignition key (Fig. 7-60).

### Removal and Installation

1. Remove tail gate inner cover panel as previously described.
2. Reaching through large inner panel access hole, disengage retainer and remove lock cylinder.
3. To install, reverse removal procedure.

## TAIL GATE LOCK RELEASE SOLENOID ASSEMBLY

### Description

An electric tail gate lock release solenoid is designed to permit unlocking of tail gate from a switch on the instrument panel. The switch that activates the solenoid will function only with the ignition "ON" and the transmission in "Park or Neutral". The solenoid is bolted to the outboard surface of the tail gate inner panel and lock at two locations. It also incorporates an indexing tab which mates with a slot in the lock assembly. Unlock force of the solenoid is transferred to the lock by means of a steel cable. This cable connects the solenoid plunger to a "shank and ball" fitting which engages into a wedge slot on the lock release lever (Fig. 7-61).

### Removal and Installation

1. Remove inner cover panel as previously described.

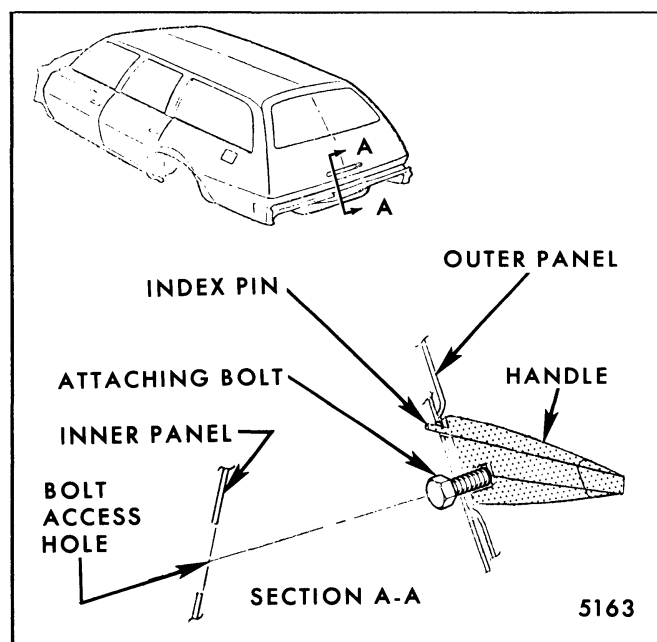


Fig. 7-59-Tail Gate Outside Handle

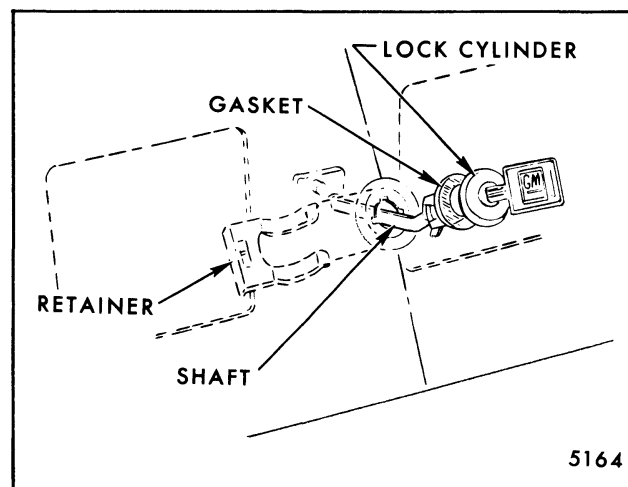


Fig. 7-60-Tail Gate Lock Cylinder

2. Reach through large inner panel access hole and hold solenoid assembly while removing bolts that secure it to the inner panel.
3. Rotate key in tail gate lock cylinder to "unlock" position and hold until solenoid is removed.

**NOTE:** This action will hold lock release lever to the uppermost position aiding solenoid removal and installation.

4. Move solenoid assembly rearward to disengage indexing tab from lock assembly.
5. Lower solenoid assembly until "shank and ball" fitting is lower than wedge slot in lock release lever.
6. Move solenoid assembly toward outer panel to disengage cable from release lever wedge slot and withdraw solenoid from tail gate.

7. Release lock cylinder key and allow it to return to neutral position.
8. Disconnect solenoid feed wire from solenoid.
9. To install, reverse removal procedure.

## TAIL GATE LOCK ASSEMBLY

### Description

The tail gate utilizes a fork bolt lock design which includes a secondary lock feature. The gate is secured in a closed position when the lock fork bolt snaps over and engages a striker bolt which is mounted to the bottom of the back body opening. The lock is unlocked by the ignition (square) key at the lock cylinder on the tail gate outer panel or optionally by means of an electrically operated solenoid (Fig. 7-61).

**WARNING:** DO NOT ATTEMPT REPAIRS TO CORRECT LOCK DISCREPANCIES. MAKE CORRECTIONS THROUGH REPLACEMENT OF LOCK ASSEMBLY.

### Removal and Installation

1. Remove screw retained lock cover from bottom of tail gate.
2. Disconnect wire harness terminal from warning light jamb switch on lock assembly (Fig. 7-62).
3. Remove two inner cover panel screws from lock assembly tabs (Fig. 7-57).

**NOTE:** If equipped with electric solenoid lock release option, it will be necessary to complete inner cover panel removal and solenoid removal.

4. Remove bolts (4) securing lock assembly to bottom of tail gate.
5. Withdraw lock assembly from bottom of tail gate while disengaging lock cylinder actuating rod from lock.

**NOTE:** Actuate lock cylinder with key to aid lock removal.

6. To install, reverse removal procedure.

**NOTE:** If lock assembly is to be replaced, install new warning lamp jamb switch.

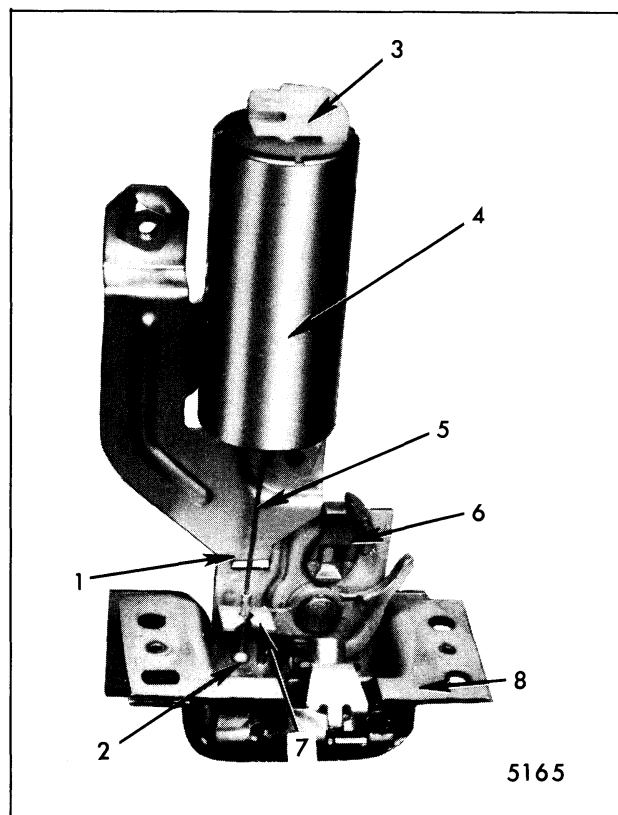


Fig. 7-61-Tail Gate Lock and Lock Release Solenoid

- |                                    |                       |
|------------------------------------|-----------------------|
| 1. Solenoid Index Tab              | 6. Lock Cylinder      |
| 2. Solenoid Shank and Ball Fitting | Release Cam           |
| 3. Feed Wire Connector             | 7. Lock Release Lever |
| 4. Solenoid Assembly               | Wedge Slot            |
| 5. Actuating Cable                 | 8. Lock Assembly      |

## TAIL GATE WARNING LIGHT JAMB SWITCH

### Description

A grounding type jamb switch is mounted to the tail gate lock assembly. Its function is to complete an electrical circuit for the instrument panel warning light when the tail gate lock is in any position other than fully locked (primary lock position) provided the ignition is "ON" (Fig. 7-62).

### Removal and Installation

1. Remove tail gate lock cover from bottom of gate.
2. Disconnect wire harness terminal from jamb switch.
3. Remove jamb switch and retaining nut assembly.
4. To install, reverse removal procedure making sure switch is insulated from lock cover.

**NOTE:** Lock assembly must be unlocked when installing new jamb switch. Torque required to properly seat jamb switch is 9-15 foot pounds. Adjustment is accomplished automatically when tail gate is fully locked.

## TAIL GATE LOCK STRIKER

### Description

The lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, float-

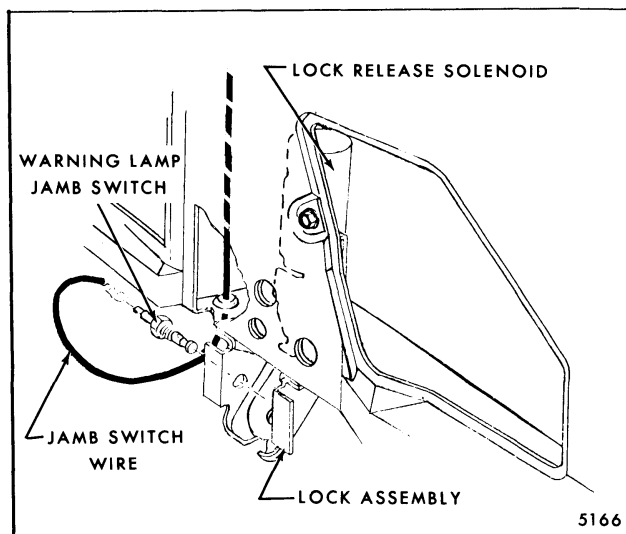


Fig. 7-62-Tail Gate Warning Lamp Jamb Switch

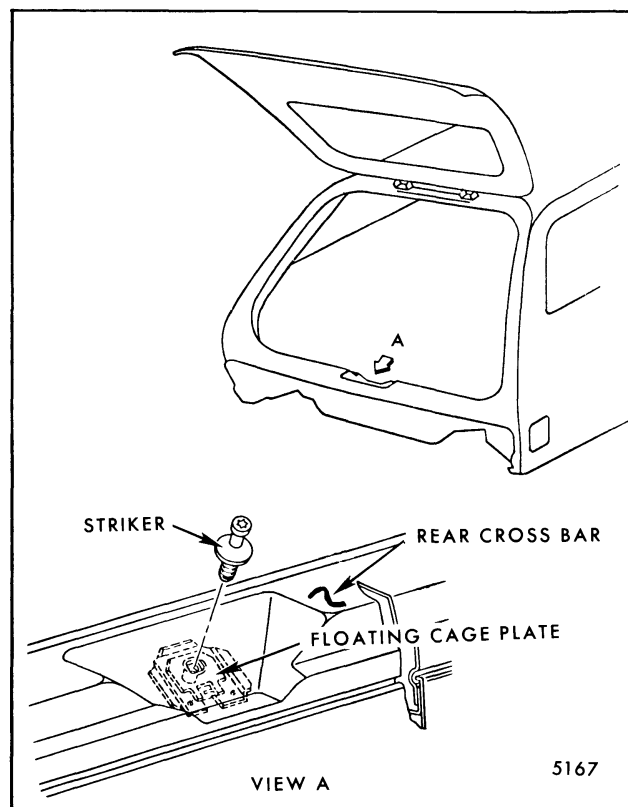


Fig. 7-63-Tail Gate Lock Striker

ing cage plate located in the center of the rear cross bar at the bottom of the back body opening (Fig. 7-63). Also it permits fore-aft and lateral adjustment of the bottom of the tail gate.

### Removal and Installation

1. Mark position of striker on rear cross bar.
2. Insert tool J-23457 or equivalent, into the star shaped tool recess in the head of the striker bolt and remove striker.
3. To install, reverse removal procedure. Make certain striker is positioned within mark. If striker is repositioned, touch-up exposed unpainted surface on rear cross bar adjacent to striker assembly. Torque striker bolt to 34 to 46 foot pounds.

### Adjustment

The following steps are performed with counterbalance support assembly and tail gate inner cover panel removed. However, if either counterbalance support assembly or inner cover panel is installed, refer to "Fore-Aft and Lateral Adjustment-Bottom of Tail Gate" near the end of this section.

1. Close tail gate to fully locked position.
2. Using striker tool J-23457 or equivalent, loosen striker while inside of vehicle.
3. Have assistant position tail gate into proper alignment from outside of vehicle.

**NOTE:** Striker must be centered in lock frame.

4. Torque striker 34 to 46 foot pounds.
5. Touch-up with paint perimeter of striker bolt as required.

## TAIL GATE WINDOW DEFOGGER-BLOWER TYPE

### Description

A blower type defogger motor is mounted on the tail gate inner panel and concealed by an inner cover

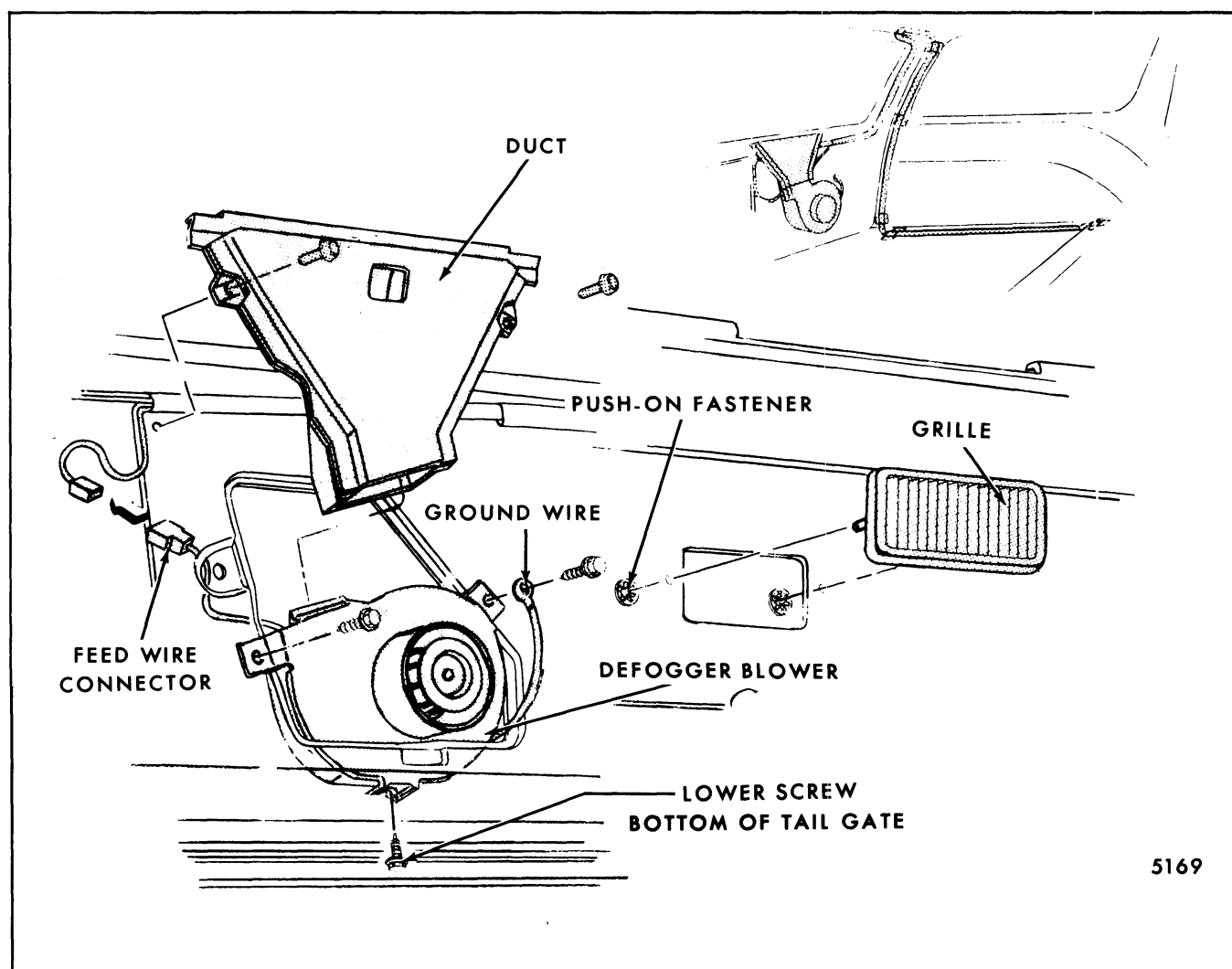
panel designed for this option. Air is drawn into the blower from the passenger compartment by way of a grille which is secured to the inner cover panel. Air exhausted from the blower is forced into a duct which directs the flow of air onto the glass. Control switch for the defogger blower is located on the instrument panel.

### Removal and Installation

1. Remove inner handle and inner cover panel as previously described.

**NOTE:** To separate grille from inner cover panel, pry push-on retainers from grille studs (Fig. 7-64).

2. Remove screws securing defogger duct assembly to inner panel at beltline and disengage duct from blower outlet nozzle to remove duct assembly.



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Fig. 7-64-Tail Gate Window Defogger Installation

3. Remove screws securing blower to inner panel (lower screw accessible from bottom of tail gate) and lift from inner panel access hole and disengage wire harness connector (Fig. 7-64).

4. To install, reverse removal procedure.

**NOTE:** Locate ground wire eyelet beneath one blower motor attaching screw.

## TAIL GATE ASSEMBLY

### Description

The tail gate is constructed of an inner and outer panel welded together to form an assembly. The upper half of the gate consists primarily of an adhesive caulked stationary glass (Fig. 7-65). Bolt-on hinges are mounted along the upper edge of the gate with a lock at the bottom. Tubular counterbalance support assemblies are mounted to the gate and provide opening assist.

### Removal

1. Remove screw retained back body opening upper finishing molding (Fig. 7-66).
2. Disconnect ground cable from battery.
3. Peel tape from tail gate harness between bend-over tabs and cut wire(s) that lead into tail gate. One, two or three color coded wires may be found inside of taped loom depending on optional equipment.

**NOTE:** Stagger cuts as shown in Figure 7-67 in order to prevent bulging of harness when wires are rejoined.

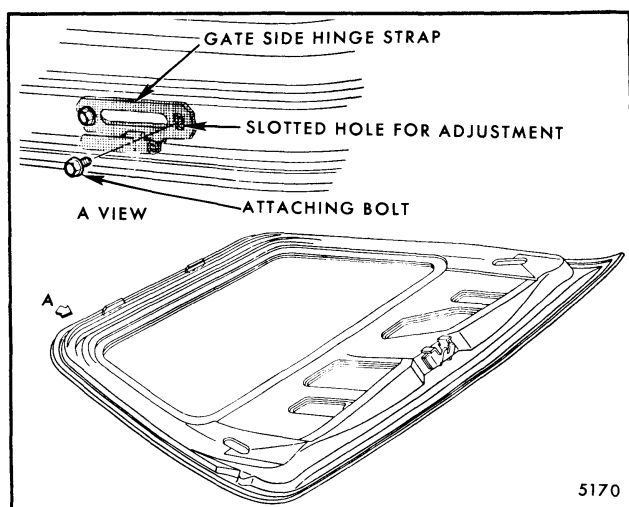


Fig. 7-65-Tail Gate Hinge Assembly

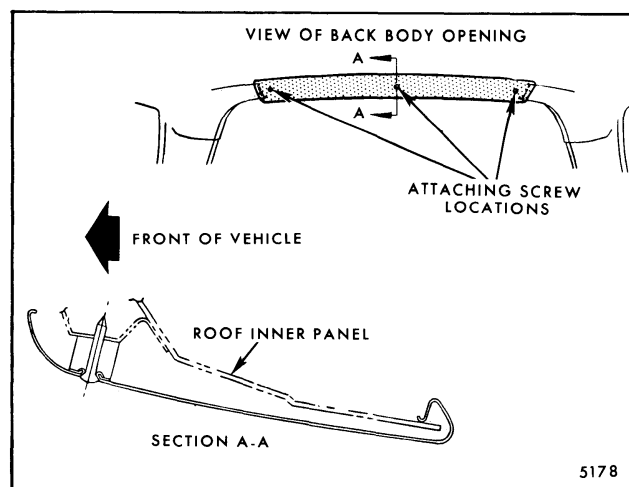


Fig. 7-66-Back Body Opening Upper Finishing Molding

4. Remove screw from grommet and tube assembly clip at roof reinforcement.
5. Disengage grommet from roof reinforcement, pull harness remnant through hole and tape to inner surface of tail gate.

6. Place protective covering between upper edge of tail gate and roof panel.

**WARNING:** DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAIL GATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

7. Perform following steps while helper(s) supports tail gate in full open position.
8. Remove both gate-side counterbalance support assembly attaching nuts, disengage from gate and allow support to rest against base of back body opening.
9. Use a 3/16" diameter rod, 18" long to remove hinge pins from hinge. As shown in Figure 7-68, place end of rod against pointed end of hinge pin; then, strike rod firmly to shear retaining clip tabs and drive pin through hinge. Repeat operation on opposite side hinge and remove tail gate from body.

### Installation

1. Install new retaining rings onto notches provided in hinge pins. Position rings so that tabs point toward head of pin as shown in Figure 7-68.

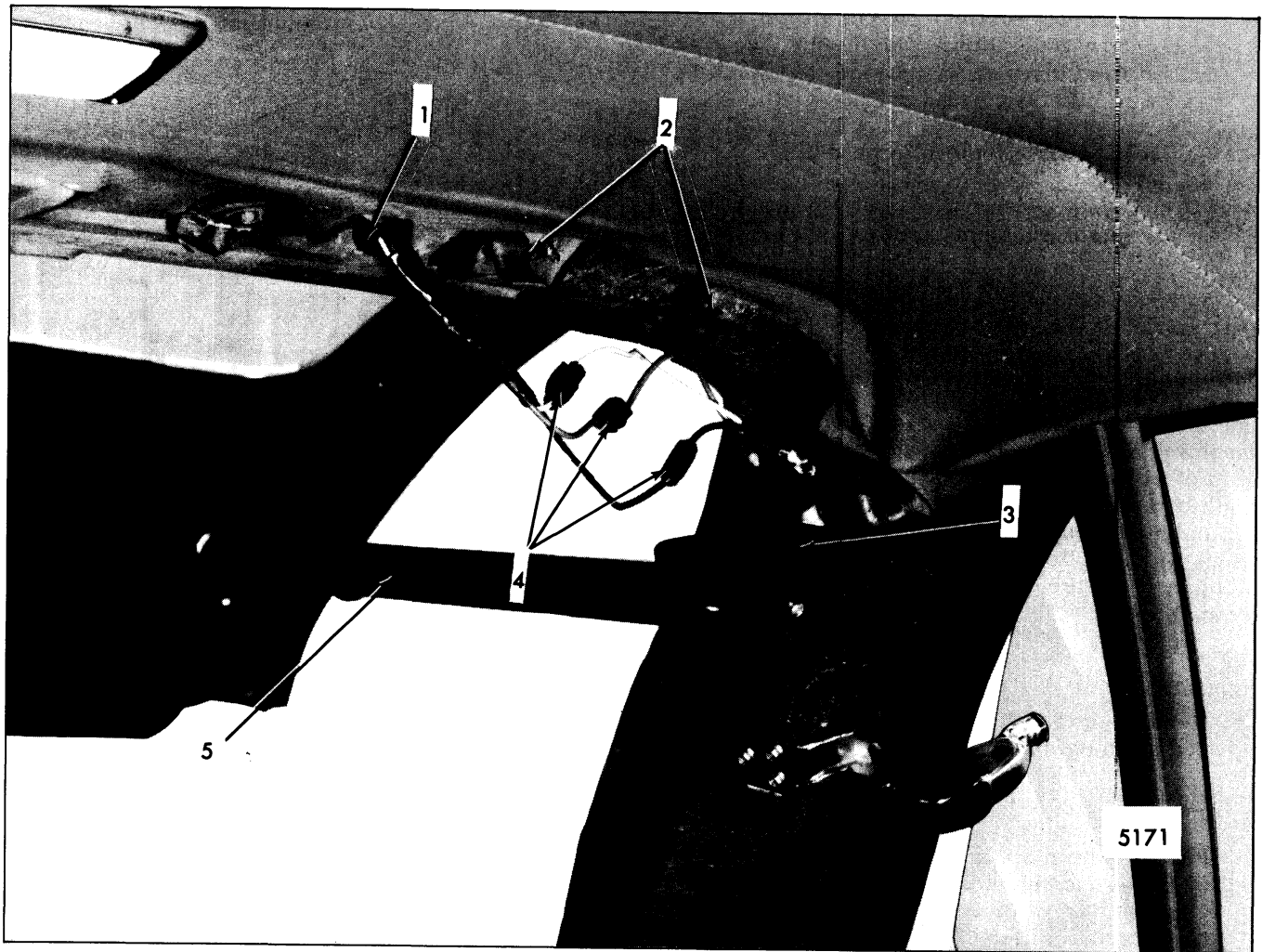


Fig. 7-67-Cut and Splice Tail Gate Harness

- |                    |  |  |                                    |
|--------------------|--|--|------------------------------------|
| 1. Sealing Grommet | 3. Counterbalance Support Assembly Pillar Anchor Plate | 4. "Scotchlok" Connectors, Taped Splice Joints or Equivalent | 5. Counterbalance Support Assembly |
|--------------------|--|--|------------------------------------|

2. Place protective covering between upper edge of tail gate and roof panel.
3. With the aid of helper(s), mate tail gate hinge with body side hinge and install hinge pins with pointed end of pin facing outboard.
4. With tail gate held fully open, position counterbalance support assembly onto gate side mounting stud and torque new retaining nut to 60 inch pounds. Repeat operation for opposite side.
5. Remove protective cover from roof panel.
6. Apply weatherstrip cement to grommet flange and seat into hole in roof reinforcement.
7. Secure grommet and tube assembly clip to roof reinforcement.
8. Splice tail gate harness wire(s) together or fasten with "Scotchlok" connector or equivalent, tape securely and retain under weld-on bend over tabs.

**NOTE:** Replace torque-tight nuts Part No. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after applying retaining adhesive, Loctite/75 Part No. 1051343 or equivalent, as directed on package.

**NOTE:** One, two or three color coded wires may be included in harness loom depending on optional equipment in tail gate.

9. Re-connect battery ground cable and check operation of circuits involved in wire splice.

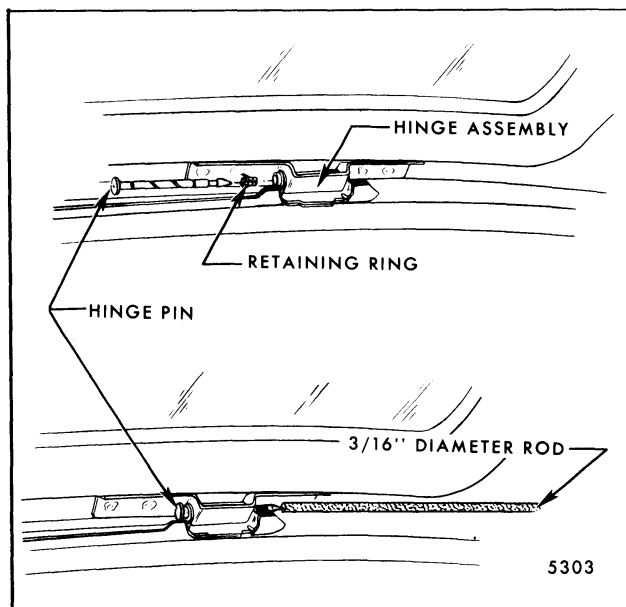


Fig. 7-68-Tail Gate Hinge Pin Removal

10. Position back body opening upper finishing molding to roof and secure with screws.

## TAIL GATE COUNTERBALANCE SUPPORT ASSEMBLY

### Description

The counterbalance support assembly is a spring loaded, telescoping tubular device that is utilized to assist tail gate opening effort. Two springs are securely retained into each unit. A heavy quick response spring is used on initial opening so that gate will clear the lock when the key or solenoid is actuated. The other spring is used to assist the tail gate through completion of the opening cycle.

A circular spring clip mounted near the center of the outer tube (right side only) provides the hold-open feature. It is actuated when the counterbalance support assembly is fully extended (tail gate fully open) and overcome as the tail gate is pulled into the closing cycle. Up stop is provided within each assembly.

A snap-in, nylon type grommet is used at each counterbalance support assembly end cap. These grommets can be removed and are serviced separately. Special grommet composition eliminate need for lubrication.

No adjustment is provided in the counterbalance support assembly therefore, a high output assembly using heavier springs is available and used when optional equipment (lock solenoid, defogger, etc.) is specified. A standard output counterbalance support assembly is identified by a red mark on the end cap adjacent to the nylon grommet. Both standard and high output supports are to be used in pairs.

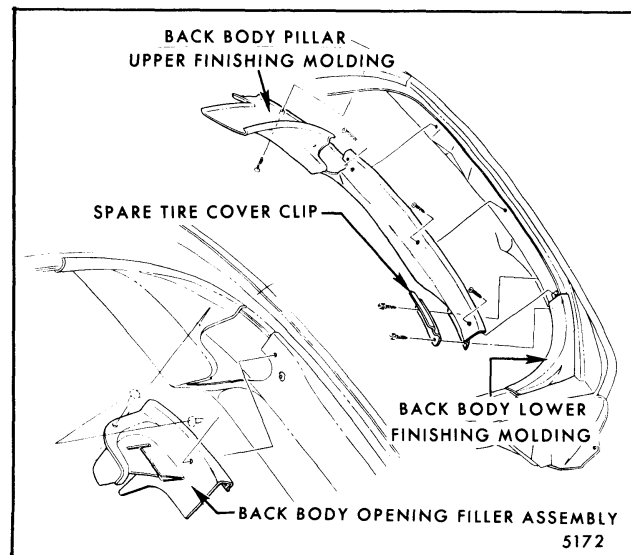


Fig. 7-69-Back Body Pillar Upper Finishing Molding - Right Side Shown

**WARNING: DO NOT ATTEMPT TO DISASSEMBLE COUNTERBALANCE SUPPORT ASSEMBLY UNDER ANY CIRCUMSTANCES BECAUSE THE SPRINGS CONTAINED THEREIN ARE ALWAYS UNDER TENSION AND RELEASE OF SUCH A SPRING MAY RESULT IN PERSONAL INJURY.**

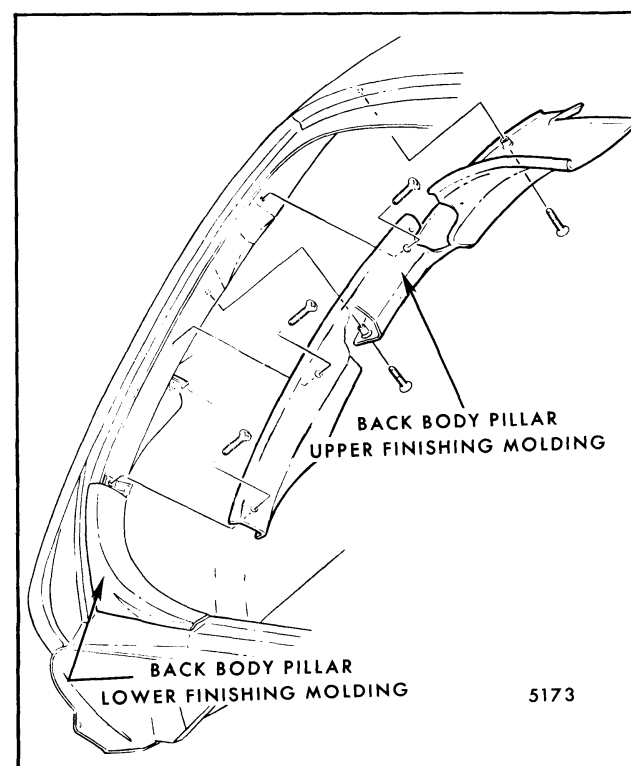


Fig. 7-70-Back Body Pillar Upper Finishing Molding - Left Side Shown

**Removal and Installation**

1. Remove back body opening filler assembly attaching screws and disengage filler assembly from back body pillar upper finishing molding (Fig. 7-69).
2. Remove screws securing back body pillar upper finishing molding and disengage pillar molding from back body pillar (Figs. 7-69 and 7-70).

**NOTE:** It may be necessary to loosen adjacent moldings to remove and/or install pillar molding.

3. Remove pillar anchor plate cover screws and slide cover from pillar and/or plate (Fig. 7-71).

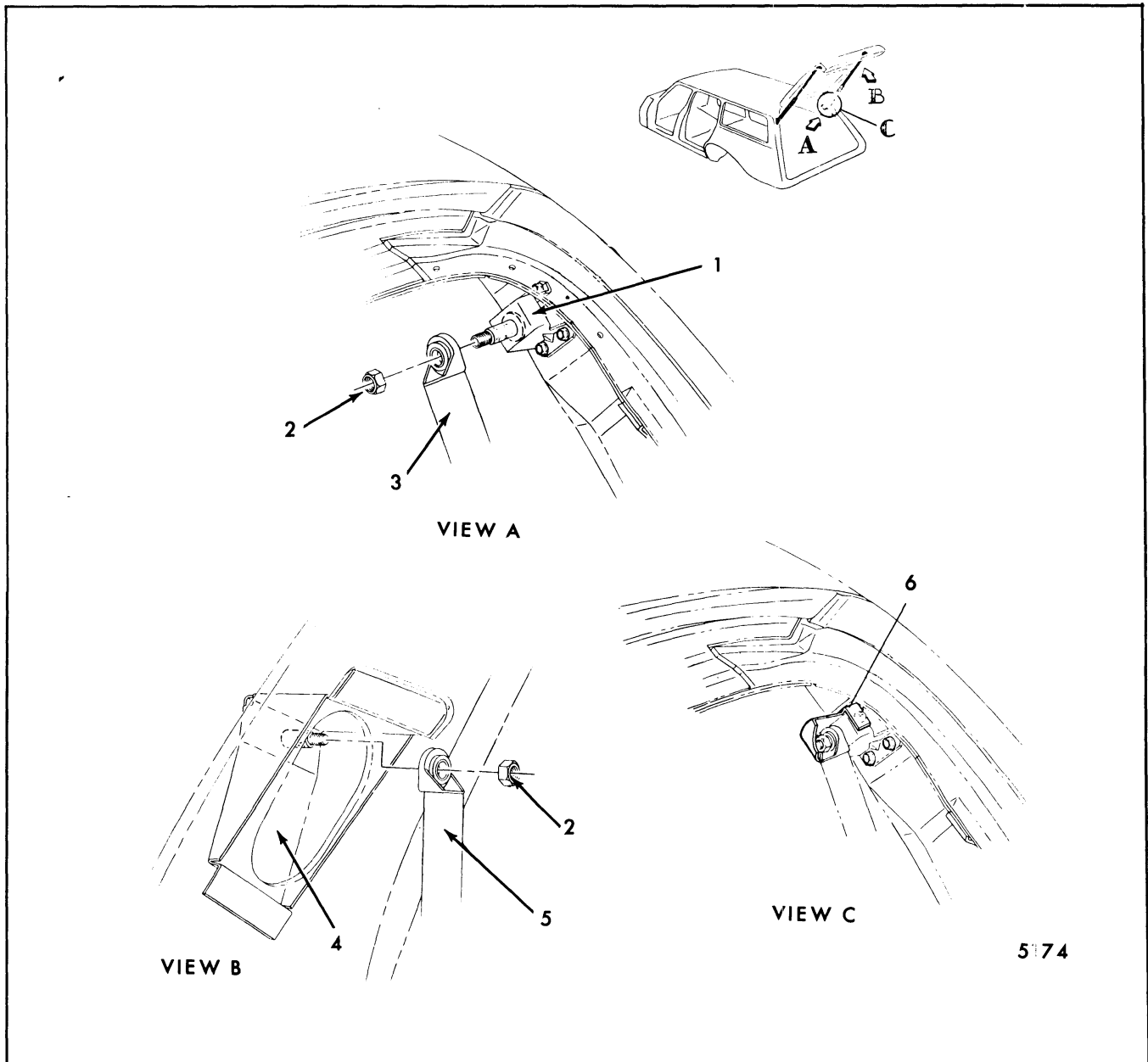


Fig. 7-71-Counterbalance Support Assembly Attachment

- |                                  |  |  |  |
|----------------------------------|--|--|--|
| 1. Back Body Pillar Anchor Plate | 3. Counterbalance Support Assembly - Large Diameter (Outer) Tube | 4. Tail Gate Anchor Plate  | 6. Counterbalance Support Assembly Upper Cover |
| 2. Torque-Tight Nuts             |  | 5. Counterbalance Support Assembly - Small Diameter (Inner) Tube |  |



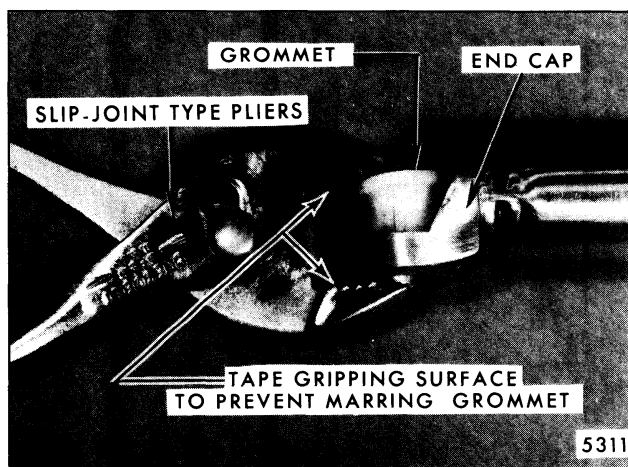


Fig. 7-72-Counterbalance Support Assembly Grommet Replacement

**WARNING:** DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAIL GATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

4. While helper supports gate in fully open position, remove counterbalance support assembly attaching nut and disengage from tail gate and pillar anchor plate (Fig. 7-71).
5. To install reverse removal procedure. Torque counterbalance support assembly attaching nuts to 60 inch pounds.

**NOTE:** Replace torque-tight nuts Part No. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after applying retaining adhesive Loctite/75 Part No. 1051343 or equivalent as directed on package. Outer tube of counterbalance support assembly (black) is mounted to the back body pillar anchor plate.

### Grommet Replacement

1. Remove counterbalance support assembly from body as described in preceding steps.
2. As a bench operation, pry grommet from end cap with flat-bladed screwdriver or similar tool.
3. Locate new grommet to end cap eyelet and press into position with pliers or similar tool (Fig. 7-72).

**NOTE:** To prevent marring new grommet or end cap, tape gripping surface of pliers.

## COUNTERBALANCE SUPPORT ASSEMBLY PILLAR ANCHOR PLATE

### Description

A shoulder bolt welded onto a bracket forms the anchor plate. The anchor plate is bolted to back body pillar near the roof at each side of the opening (View A, Fig. 7-71). A metal cover is secured by screws to the pillar anchor plate after the counterbalance support assembly is attached. The function of the anchor plate cover is to entrap the counterbalance support assembly if the anchor plate shoulder bolt shears or attaching torque-tight nut works loose (Fig. 7-71).

### Removal and Installation

**WARNING:** DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAIL GATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

1. Remove tail gate counterbalance support assembly as previously described.
2. Remove bolts securing pillar anchor plate to back body pillar and remove.
3. To install, reverse removal procedure.

## TAIL GATE HINGE ASSEMBLY

### Description

The tail gate hinge assembly consists primarily of a bolt-on body side hinge strap and two bolt-on gate side hinge straps. Hinge pins are used to join the gate and body side hinge straps together (Figs. 7-73 and 7-65). Retaining clips are used to secure the hinge pins. The body side hinge strap is adjustable fore-aft and laterally. The gate-side hinge strap is adjustable up-down to accomplish flush fit at top of tail gate to roof panel.

### Removal and Installation

1. Remove tail gate as previously described. Gate side hinge is removed as a bench operation.
2. Mark location of hinge strap to aid installation.
3. Remove screw retained back body opening upper finishing molding - body side hinge strap only.

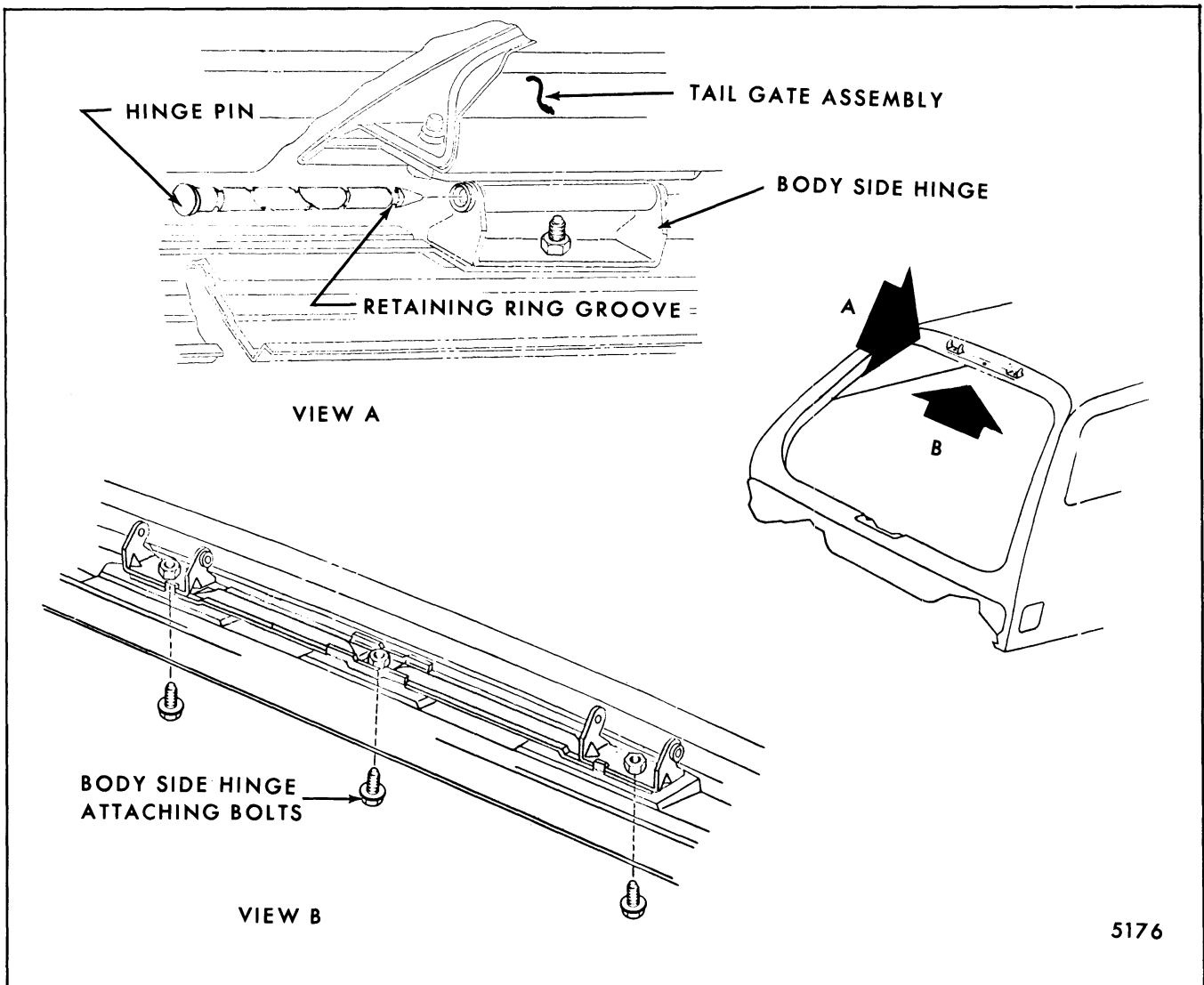


Fig. 7-73-Body Side Hinge Attachment

4. Remove hinge strap attaching bolts and remove hinge strap.
5. To install, reverse removal procedure.

**NOTE:** Prior to installation, apply heavy-bodied sealer to surface of hinge that contacts roof reinforcement, also underside of bolt and washer.

### Adjustment

Prior to installing counterbalance support assemblies to tail gate the body-side hinge should be adjusted. However, adjustment may be performed after the counterbalance support assemblies have been attached to the tail gate by referring to "Tail Gate Alignment" at the end of this section.

1. While inside the rear of the vehicle and the tail gate closed to the fully locked position, loosen three body-side hinge strap attaching bolts.

**NOTE:** Attaching bolt washers incorporate locking barbs, therefore it may be necessary to pry washer from roof reinforcement in order to permit relocation of hinge strap assembly.

2. Have helper outside of vehicle position tail gate in opening. Top of tail gate must be  $\frac{1}{4}$ " from roof panel. When counter-balance support assemblies are installed tail gate will move slightly rearward resulting in a proper gap of  $\frac{5}{16}$ " at roof panel.
3. Torque body-side hinge strap attaching bolts 7 to 8 foot pounds.

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4. Touch-up with paint perimeter of hinge strap as required.

**NOTE:** Refer to "Up-Down Adjustment" at rear of this section for gate side hinge adjustment.

## TAIL GATE ALIGNMENT

### Description

The tail gate is adjustable up-down, fore-aft and laterally within its body opening. All adjustments are performed at the hinge straps (both gate and body side) and at the lock striker.

The gate-side hinge strap and lock striker are accessible without trim removal. Only the back body opening upper finishing molding need be removed for body side hinge strap accessibility.

**CAUTION:** Do not loosen body-side hinge strap attaching bolts with tail gate in any position other than fully open because force exerted by counterbalance support assemblies will cause hinge strap to lunge rearward into the extreme adjusting slot.

### Fore-Aft and Lateral Adjustment - Top of Tail Gate

1. With tail gate closed, determine amount of adjustment required.
2. Open tail gate and mark perimeter of body-side hinge strap.
3. Remove screw retained back body opening upper finishing molding.

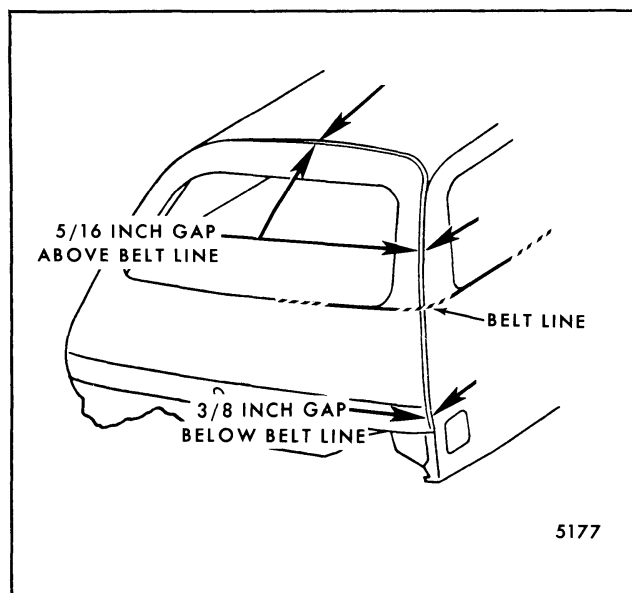


Fig. 7-74-Tail Gate Alignment

4. Loosen three body-side hinge strap attaching bolts located beneath finishing molding.

**NOTE:** Attaching bolt washers incorporate locking barbs, therefore it may be necessary to pry washer from roof reinforcement in order to permit relocation of hinge strap assembly.

5. Use wooden block or similar caulking tool and mallet to shift hinge strap to desired location.
6. Securely tighten all three hinge strap attaching bolts.
7. Slowly close tail gate to fully locked position. If lock does not engage with striker because of new tail gate position, relocate striker.
8. Check tail gate position in opening. If further adjustment is required, repeat preceding steps (Fig. 7-74).
9. Torque hinge strap attaching bolts 7 to 9 foot pounds.
10. Install back body opening upper finishing molding.
11. Remove marks and touch-up with paint perimeter of hinge strap as required.

### Fore-Aft and Lateral Adjustment - Bottom of Tail Gate

1. With tail gate closed, determine amount of adjustment required.
2. Open tail gate and mark perimeter of striker washer.
3. Using striker bolt tool J-23457 or equivalent, loosen striker and relocate as required.

**NOTE:** Striker must be centered in lock frame.

4. Securely tighten striker bolt and close gate to check alignment. Repeat preceding steps if required (Fig. 7-74).
5. Open tail gate and torque striker bolt 34 to 46 foot pounds.
6. Remove mark and touch-up with paint perimeter of striker washer as required.

### Up-Down (Flush) Adjustment - Top of Tail Gate to Roof Panel

1. With tail gate closed, determine amount of adjustment required (above or below flush).
2. Open tail gate and mark perimeter of gate-side hinge strap(s).
3. Loosen gate-side hinge strap bolts (2) and shift gate on hinge. Repeat on opposite gate-side hinge if required.
4. Securely tighten hinge bolts and close to check alignment. Repeat preceding steps if required.
5. Open tail gate and torque hinge bolts 7-9 foot pounds.

### TAIL GATE LUBRICATION

#### Description

All mechanical components that have relative motion with other parts are lubricated during assembly. If additional lubrication is required, the specified materials or their equivalents as stated here should be used.

The following tail gate components should be lubricated when required with a thin coat of white lithium soap grease (Fiske Bros. Lo-Temp Lubriplate No. 777 or equivalent).

1. Tail gate lock fork bolt.
2. Tail gate hinge pins.

Counterbalance support assembly grommets are constructed of a special material that does not require lubrication.

## SINGLE ACTING TAIL GATE - "A-80" STYLE

### DESCRIPTION

The single acting tail gate for pick-up delivery styles is fabricated primarily of an outer and an inner panel with reinforcements provided at critical attachment locations. An opening in the inner panel allows access to the lock remote control and remote control rods. The tail gate is unlatched by a remote control

handle located at top center of the outer panel and is supported in the open (horizontal) position by a support cable on each side of the gate

### TAIL GATE INNER PANEL ACCESS HOLE COVER

The single acting tail gate employs an inner panel access hole cover which is secured to the inner panel

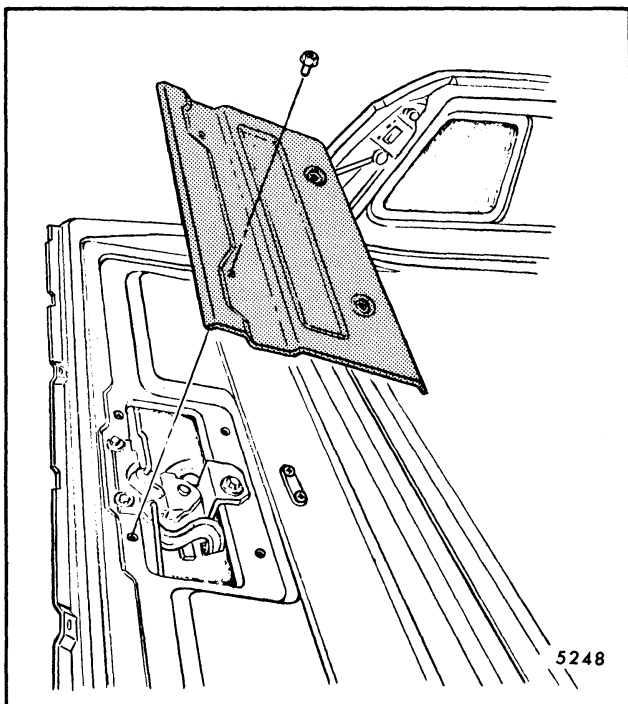


Fig. 7-75-Tail Gate Inner Panel Access Hole Cover

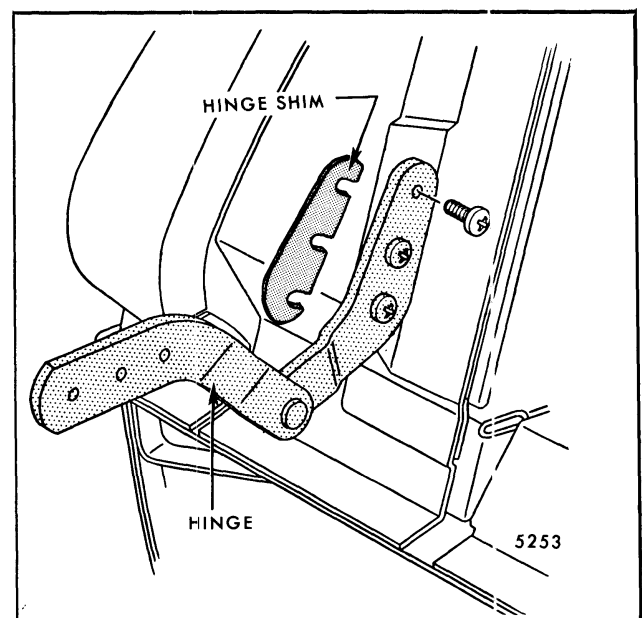


Fig. 7-76-Tail Gate Hinge Assembly

entirely by screws (Fig. 7-75). The cover panel may be removed with the tail gate in either the open or closed position.

### Removal and Installation

1. Remove screws securing cover panel to inner panel and remove panel.
2. To install, reverse removal procedure.

## TAIL GATE HINGE ASSEMBLY

### Removal and Installation

1. Open tail gate and provide support on side from which hinge is to be removed. Mark location of hinge on tail gate and body.

2. Remove tail gate hinge attaching bolts from tail gate and body and remove hinge (Fig. 7-76).
3. To install, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer to surface of hinge that contacts body and tail gate.
4. Check alignment of tail gate in body opening and adjust as required (Refer "Adjustments" - Tail Gate Assembly).

## TAIL GATE SUPPORT CABLE(S)

### Removal and Installation

1. Support tail gate in open position.

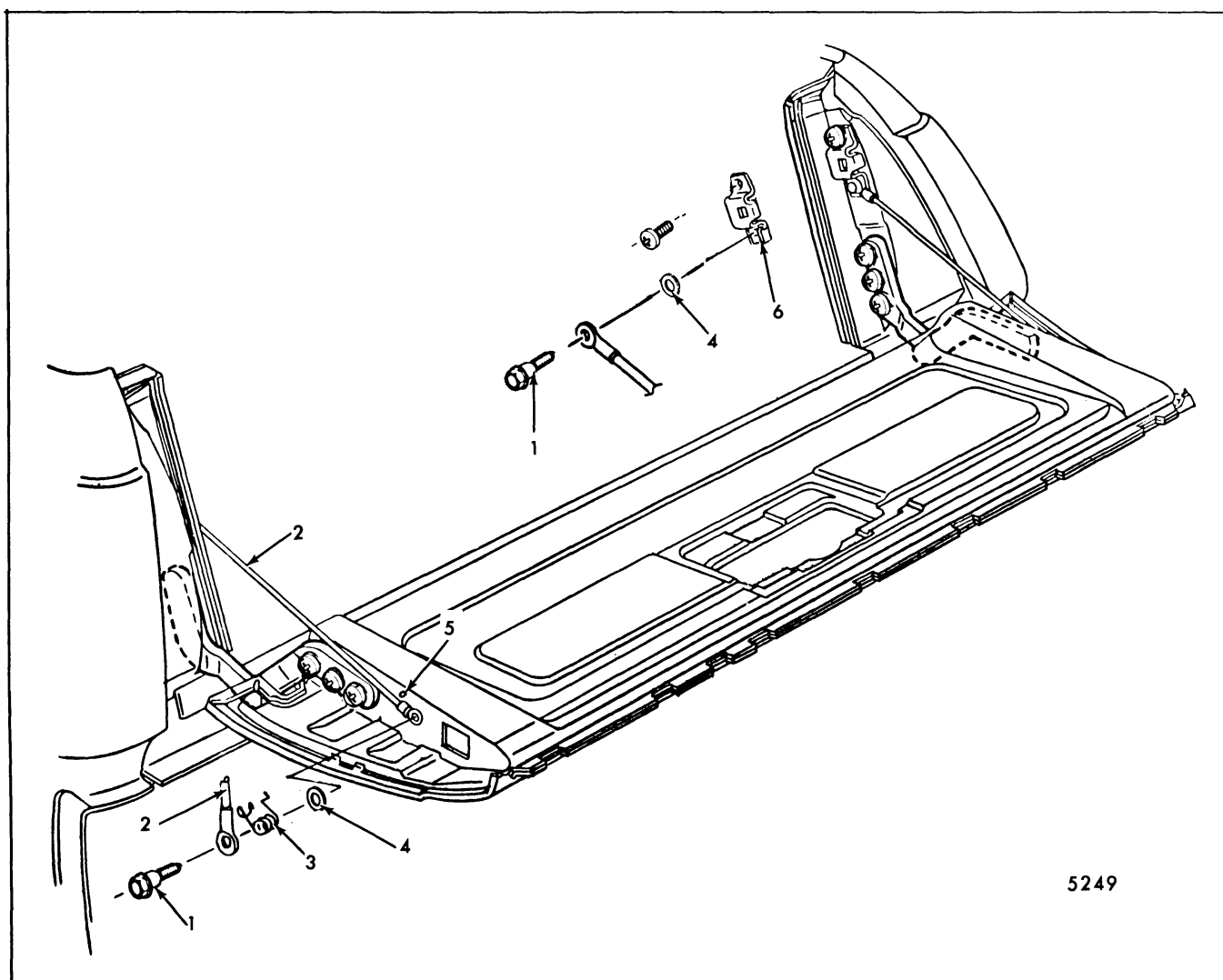


Fig. 7-77-Tail Gate Support Cable Attachment

- |                                   |                                   |                            |                                 |
|-----------------------------------|-----------------------------------|----------------------------|---------------------------------|
| 1. Support Cable<br>Shoulder Bolt | 2. Support Cable                  | 4. Support Cable<br>Washer | 5. Assist Spring Anchor<br>Hole |
|                                   | 3. Support Cable Assist<br>Spring |                            | 6. Latch Striker                |

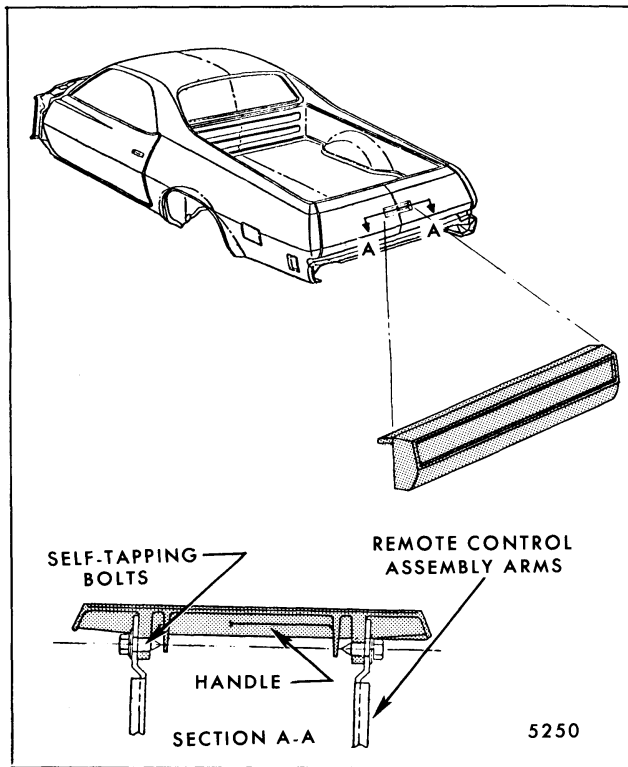


Fig. 7-78 - Tail Gate Outside Handle

2. Disengage support cable return spring and remove cable attaching bolts on tail gate and body pillar (Fig. 7-77). Remove support cable.

3. To install, reverse removal procedure.

## TAIL GATE ASSEMBLY

### Removal and Installation

1. Open tail gate and support in horizontal position.
2. Disengage support cable return springs and remove support cable attaching bolts on tail gate (Fig. 7-77).
3. With the aid of a helper, remove right and left tail gate hinge to gate attaching bolts and remove tail gate from body.
4. To install, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer to surface of hinges that contact tail gate.

### Adjustments

Up-down and fore-aft adjustment is provided at hinge to gate attaching bolts. Side to side adjustment is achieved at hinge to body attaching bolts with spacer(s) (Fig. 7-76). Use spacer(s) provided or substitute with 1/2" inside diameter plated flat washer - 1/16" thick at each hinge attaching bolt location on affected side.

**NOTE:** Following any adjustment of the tail gate, check engagement of latches to strikers as described in "Tail Gate Latch Striker Adjustment".

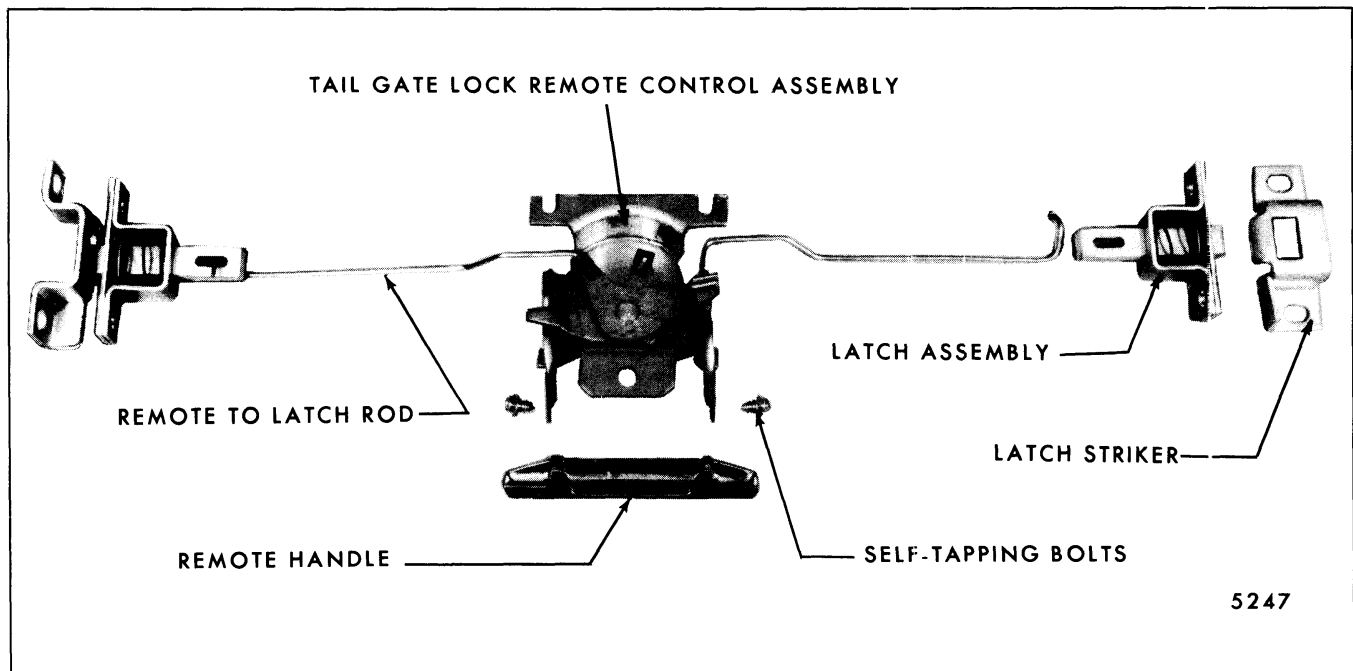


Fig. 7-79-Tail Gate Hardware Components

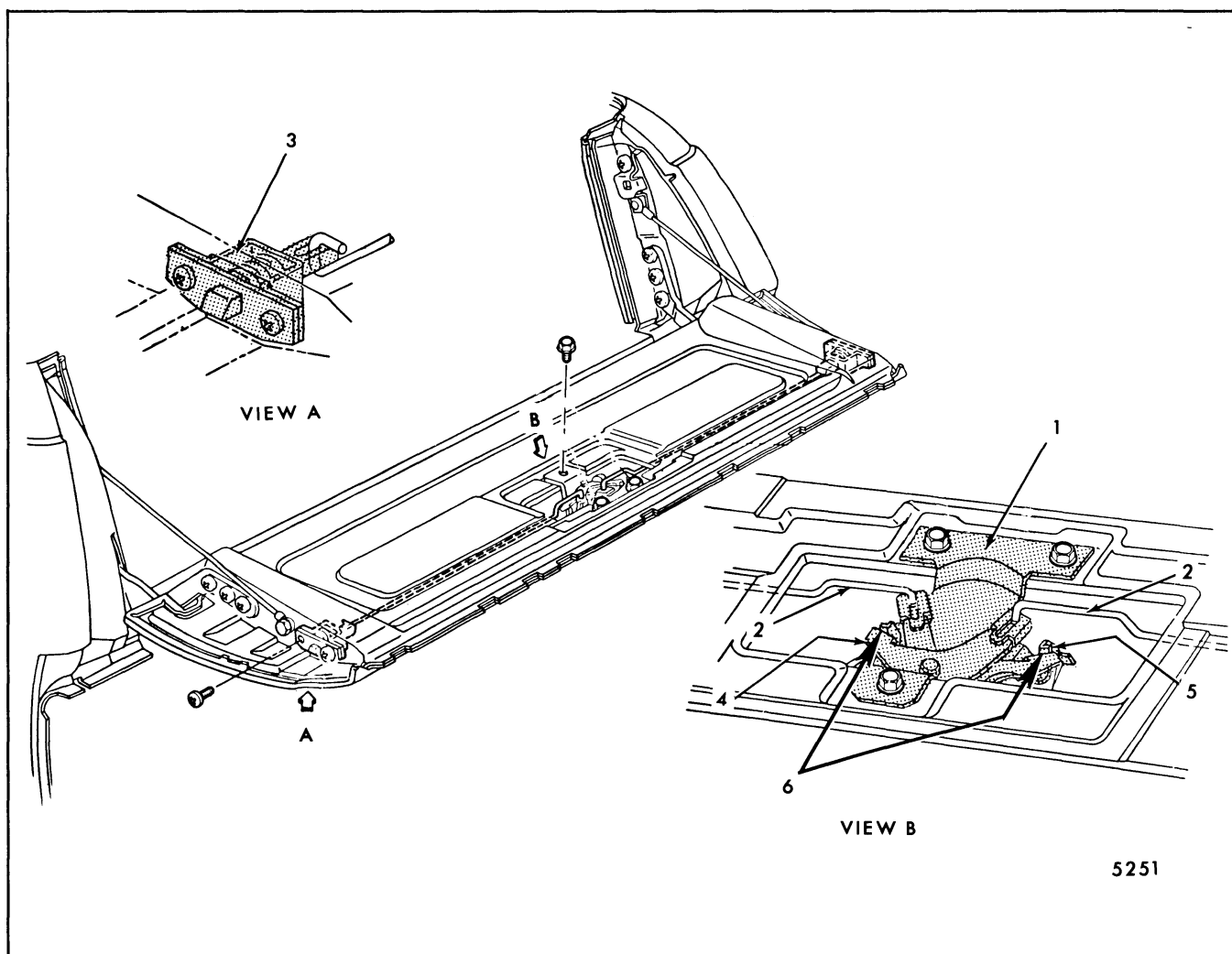


Fig. 7-80-Tail Gate Hardware Installed

- |                            |                                |                     |   |
|----------------------------|--------------------------------|---------------------|---|
| 1. Remote Control Assembly | 2. Remote Control to Latch Rod | 3. Latch Assembly   | 6. Point of Contact-Remote Arms to Contact Latch Rod Rotors |
|                            |                                | 4. Latch Arm Rotors |   |
|                            |                                | 5. Remote Arms      |   |

## TAIL GATE LOCK REMOTE CONTROL ASSEMBLY

### Removal and Installation

1. Remove tail gate inner panel access hole cover (Fig. 7-75).
2. Disconnect remote control-to-latch rods at remote assembly by sliding rod attaching clips out of engagement (Fig. 7-80).
3. Remove two self-tapping bolts securing outside pull handle to lock remote control assembly and remove handle (Fig. 7-78).
4. Remove remote control attaching bolts and withdraw assembly from tail gate. Refer to Figure 7-79 showing hardware components removed from tail gate.
5. To install, reverse removal procedure.

### Adjustments

To assure simultaneous action of right and left latches, loosen remote control assembly bolts, position assembly so that remote arms contact latch rod rotors and tighten remote control bolts (Fig. 7-80).

## TAIL GATE LATCH ASSEMBLY - RIGHT OR LEFT

### Removal and Installation

1. Remove tail gate inner panel access hole cover (Fig. 7-75).
2. Disengage remote control-to-latch rods at remote control assembly (Fig. 7-80).
3. Remove bolts securing latch assembly to tail gate and withdraw latch with control rod attached from gate. Remove control rod from latch if required, as a bench operation (Fig. 7-80).
4. To install, reverse removal procedure.

## TAIL GATE LATCH STRIKER - RIGHT OR LEFT

### Removal and Installation

1. Open tail gate and mark position of striker on body pillar.
2. Remove latch striker attaching screws and remove striker from body pillar (Fig. 7-77).

**NOTE:** Lower latch striker attaching screw is used to secure support cable to body pillar therefore, it will be necessary to support tail gate if both latch strikers are to be removed.

3. To install, align striker within marked area and install attaching screws.

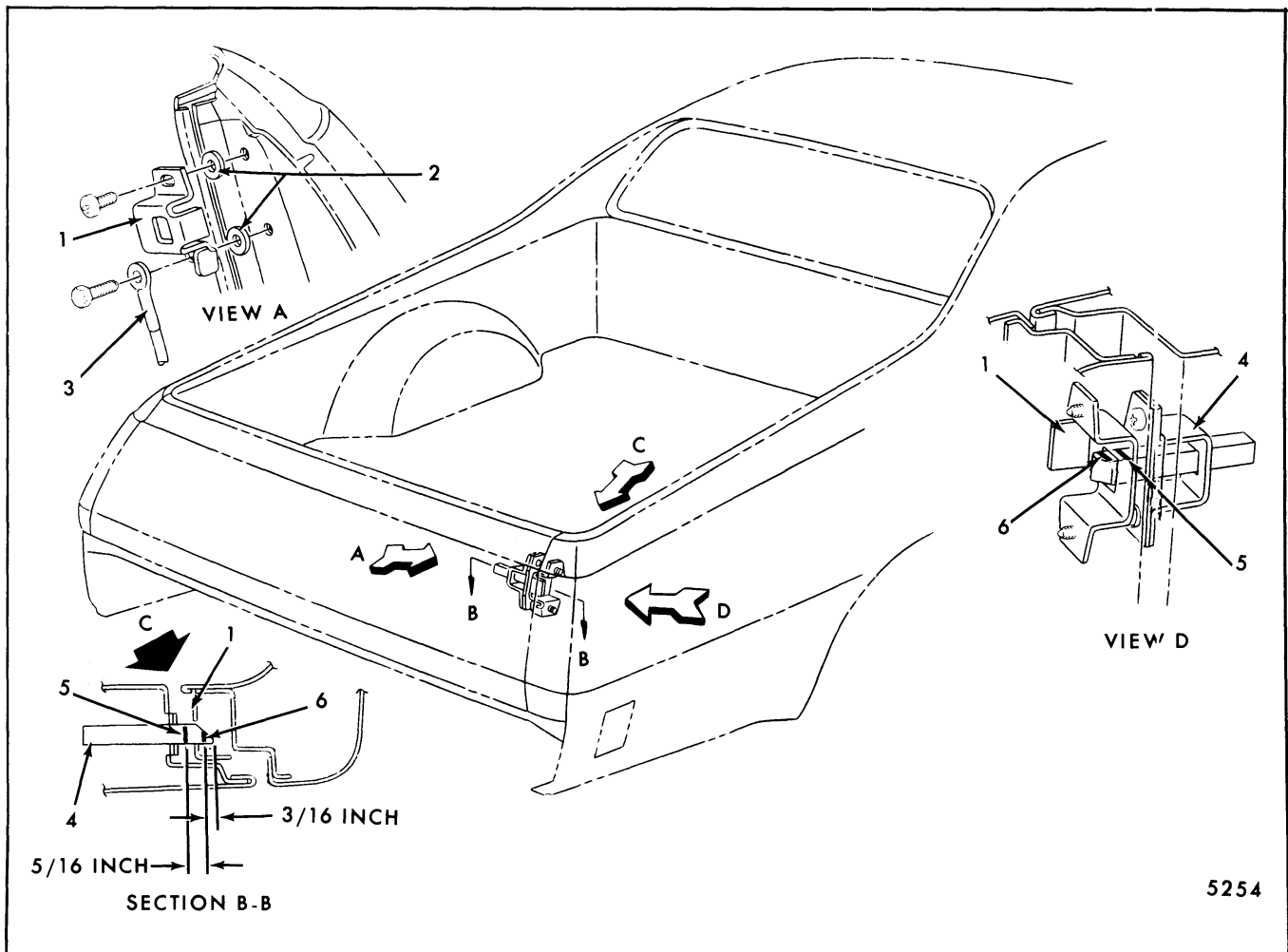


Fig. 7-81-Tail Gate Latch to Striker Adjustment

1. Striker
2. Spacers

3. Support Cable
4. Latch Assembly

5. Crayon Mark B
6. Crayon Mark A



## TAIL GATE ADJUSTMENTS

1. To adjust the tail gate latch striker up and down or fore and aft, loosen striker attaching screws, shift striker to desired position and tighten attaching screws.
2. Dimensional specifications for use of latch striker spacers are found in Figure 7-81.
  - a. Tail gate should be properly aligned before checking spacer requirements.
  - b. To determine if tail gate latch striker spacers are required, mark the latch as indicated in Section B-B, Figure 7-81 with a bright colored crayon then slam gate closed to insure full latch to striker engagement.
    - c. If marks "A and B" are visible when viewed through gap between back body pillar and tail gate pillar (Arrow C, Fig. 7-81), install a spacer (1/16" thick plated flat washer - 1/2" I.D.) between striker and pillar at striker attaching bolt locations. Add additional spacers as required until only mark "B" is visible inboard of striker.
    - d. If neither mark "A" or "B" appear inboard of striker, remove spacers from behind striker until only mark "B" is visible.
    - e. If only mark "B" is visible inboard of striker during initial check, latch to striker engagement is satisfactory.

## RETRACTABLE TAIL GATE - "B-35, 45" STYLE

### DESCRIPTION

The retractable tail gate is designed to lower into the underbody and in general follows the body contour during the opening and closing cycles. Similarly, the back window, which is separate from the gate, raises upward and into the space between the roof inner and outer panels.

The power operated window (standard equipment) can be operated by either of two control switches; one on the instrument panel and one (key operated) on the rear of the right hand quarter outer panel, adjacent to the gate.

The power operated tail gate (optional equipment) may be operated by the exterior key switch, but remote operation by an instrument panel switch is limited to the following car division specific conditions:

1. On Chevrolet styles, the power tail gate can be operated by the instrument panel switch, provided ignition switch is in "RUN" position and transmission is in "PARK" only.
2. On Pontiac and Buick styles, the power tail gate can be operated by the instrument panel switch, provided ignition switch is in "Run" position and transmission is in "Park" or "Neutral".
3. On Oldsmobile styles, the tail gate can be operated by the instrument panel switch, provided ignition switch is in "Run" position with the engine off.

For power operated tail gates, the exterior control switch incorporates three detents each to the right

and left of center (vertical) position. Rotation of the switch to the first detent operates the window, second detent the tail gate and third detent is for simultaneous operation of window and tail gate. The exterior switches actuate opening cycles when rotated clockwise and closing cycles when rotated counterclockwise.

The manual tail gate may be released from the fully closed (latched) position only by the exterior control switch. Rotation of the key to the first position (clockwise) opens the tail gate window. After the window raises approximately 8 inches, clockwise rotation of the knob mechanically releases the tail gate for manual lowering. A grip handle at top center of the manual tail gate is provided for manual raising and latching of the gate. Rotation of the key counterclockwise closes the tail gate window.

A design feature prevents counterclockwise rotation of the exterior key switch for lowering (closing) the window until the manual tail gate is fully closed. Another safety feature prevents lowering the window from the instrument panel switch (beyond a point approximately 8 inches above the beltline) until the manual tail gate is fully closed.

Control of the window and power operated tail gate from the instrument panel is accomplished with individual switches. The safety features provided with the manual tail gate with relation to the window, are not required with the power operated tail gate option.

Figure 7-82 identifies the component parts of the retractable tail gate and window and their relationship.

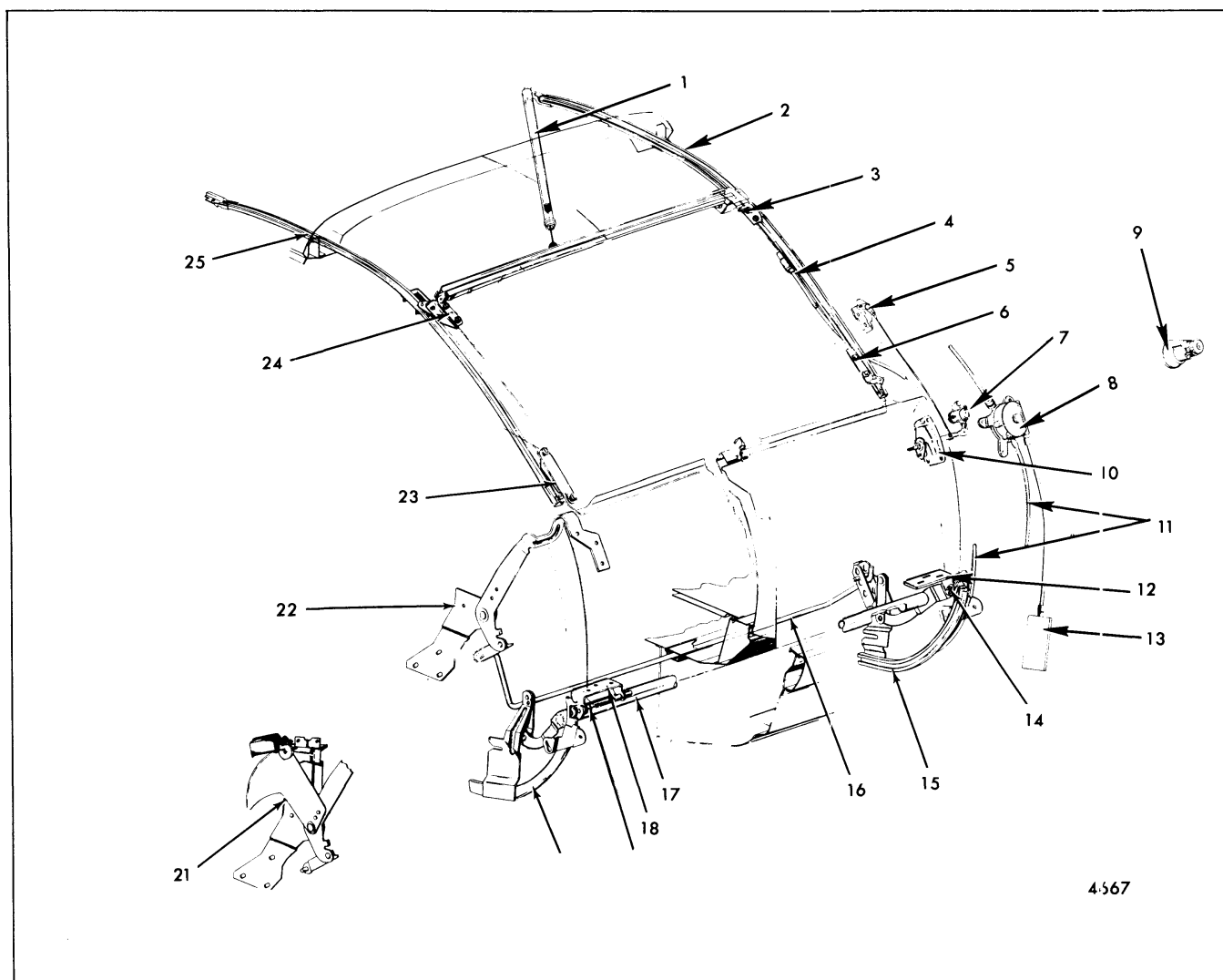


Fig. 7-82-Retractable Tail Gate and Window Hardware

- |  |   |  |  |
|--|---|--|--|
| 1. Window Lift Spring and Silencer                     | 7. Lock and Release Switch Assembly - (Manual Gate) | 14. Torque Roller and Shaft Assembly - Right     | 20. Tail Gate Guide Channel Assembly - Left            |
| 2. Window Guide Cam Assembly - Right                   | 8. Window Regulator Assembly                        | 15. Tail Gate Guide Channel Assembly - Right     | 21. Lift Arm Hinge and Regulator Assembly - (Electric) |
| 3. Window Guide Roller Assembly - Upper Right          | 9. Window and Gate Switch Assembly (Power Gate)     | 16. Tail Gate Hinge Torque Rod                   | 22. Lift Arm Hinge Assembly - (Manual)                 |
| 4. Window Drive Cable Assembly                         | 10. Tail Gate Lock Assembly                         | 17. Tail Gate Synchronizing Torque Tube Assembly | 23. Window Guide Roller Assembly - Lower Left          |
| 5. Window Stop Cable and Clip Assembly - (Manual Gate) | 11. Window Regulator Storage Conduit                | 18. Tail Gate Roller Support - Left              | 24. Window Guide Roller Assembly - Upper Left          |
| 6. Window Guide Roller Assembly - Lower Right          | 12. Tail Gate Roller Support - Right                | 19. Torque Roller and Shaft Assembly - Left      | 25. Window Guide Cam Assembly - Left                   |
|  | 13. Window Motor Assembly                           |  |  |

For the purpose of clarity, the following retractable tail gate information is divided into four major groups:

- |                |  |
|----------------|--|
| 1. Weatherseal | 2. Window system                       |
|                | 3. Tail gate system                    |
|                | 4. Window and tail gate control system |

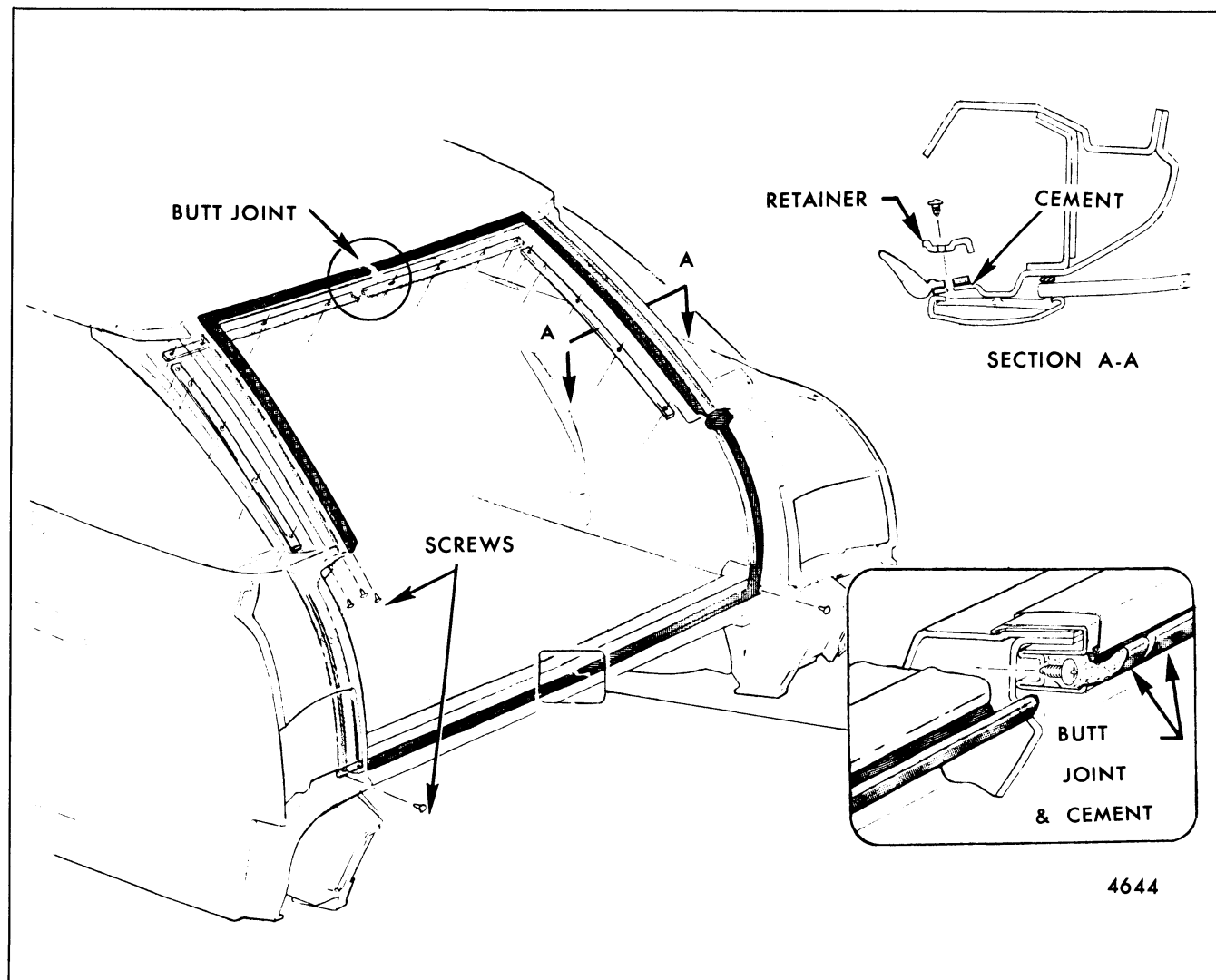


Fig. 7-83-Back Body Opening Weatherstrip Retention

## BACK BODY OPENING WEATHERSTRIP

### Description

The back body opening weatherstrip is of two-piece design with a butt joint located at the bottom and top of the opening (Fig. 7-83). Below the belt, the weatherstrip is cemented into screw applied channel-type retainers. The weatherstrip includes a sculptured detail area (referred to as the "mucket") at the beltline to seal the body opening off-set. At this area, the weatherstrip is retained by cement, screws and nylon drive nail fasteners. Above the beltline, the weatherstrip is retained by cement and screw-attached retainers applied over the weatherstrip.

**NOTE:** Staples used to secure retainers to upper section of weatherstrip are not required for service.

### Removal and Installation

1. Raise tail gate window. Remove down travel bumper on tail gate hinge lift arm and lower tail gate.
2. Remove right and left pillar finishing moldings and window inner filler strips.
3. Remove screws securing weatherstrip retainers above beltline, at "mucket" areas (including drive nail fasteners) and at lower corners of back body opening (Fig. 7-83).
4. With a flat-bladed tool, carefully remove weatherstrip around entire back body opening. Separate the weatherstrip at either or both butt joint to facilitate removal between hinge lift arm and tail gate.

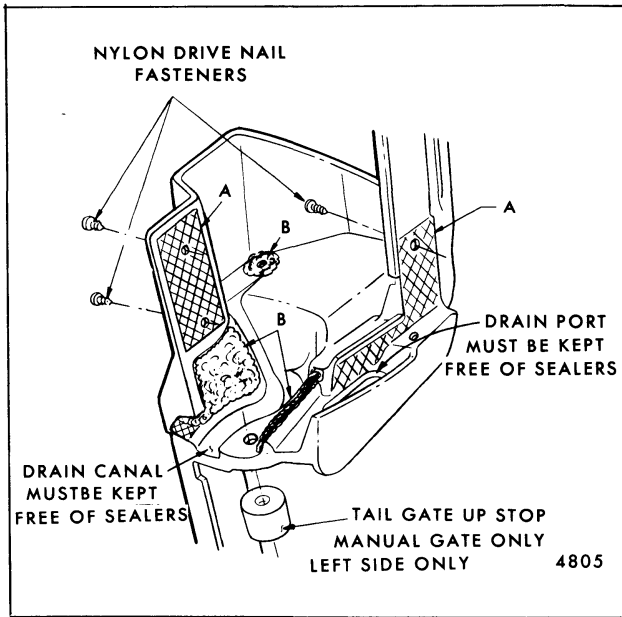


Fig. 7-84-Mucket Sealer Locations

- A. Apply Black Weatherstrip Cement To This Area  
 B. Apply Body Caulking Material To This Area

To install weatherstrip, apply a bead of black weatherstrip cement into the retainer below the beltline, around the upper half of the back body opening and load sealers into the "mucket" as shown in Figure 7-84. Secure "mucket" to back body pillar off-set with drive nail fasteners and screws. Next, install the lower weatherstrip section into the retainer. Finish by aligning the retainer to the upper weatherstrip section (locate side retainer as close as possible to "mucket" drive nail fastener) and secure with screws. Cut off excess weatherstrip to form a butt joint and cement ends together at top and bottom of body opening.

## TAIL GATE BELT WEATHERSTRIP

### Description

The tail gate belt weatherstrip is cemented to an adjustable (fore-aft) metal retainer which is fastened to the top of the tail gate by screws (Fig. 7-85). A strip of closed cell nitril foam tape is positioned between the retainer and the top of the tail gate to prevent water entry beneath the retainer. Approximately 2 inches of belt weatherstrip extends beyond each end of the metal retainer. This section of weatherstrip (each end) is secured directly to the tail gate by cement and a single screw.

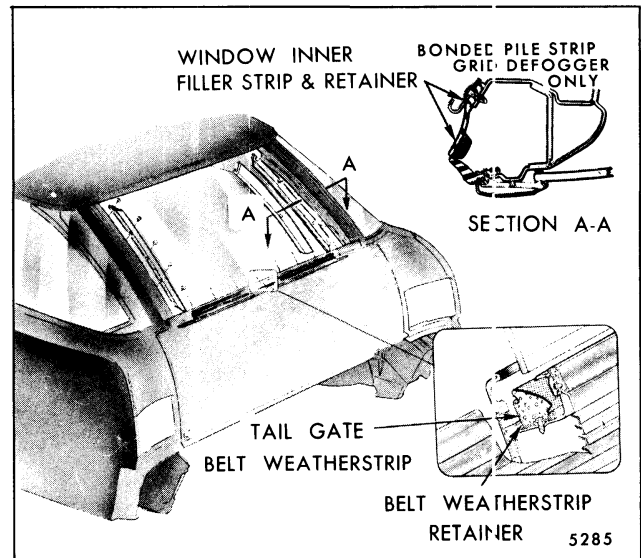


Fig. 7-85-Tail Gate Belt Weatherstrip and Window Inner Filler Strip

### Removal and Installation

1. Remove screws securing end of weatherstrip to tail gate and with flat-bladed tool, carefully remove weatherstrip from its retainer (Fig. 7-85).
2. To install, reverse the removal procedure.

**NOTE:** The tail gate belt outer sealing strip is integral with belt reveal molding and is removed as a unit.

## TAIL GATE WINDOW INNER FILLER STRIP

### Description

A black rubber filler strip is used at the inboard surface of each back body pillar above the beltline and serves to conceal the window supporting hardware (Fig. 7-85). On styles equipped with tail gate window grid defogger option, the lip of the filler strip incorporates a bonded pile strip in the area of glass contact to protect grid defogger lines from abrasion during glass cycling. A metal retainer is positioned over the heel of the filler strip and secured to the pillar with screws. A pillar finishing molding is applied over the filler strip and the inboard edge is tucked into the filler strip retainer. A plastic, color-keyed, filler strip is used at the top of the body opening (Fig. 7-86).

### Removal and Installation

1. Remove back body pillar and/or upper body opening finishing molding (Fig. 7-86).

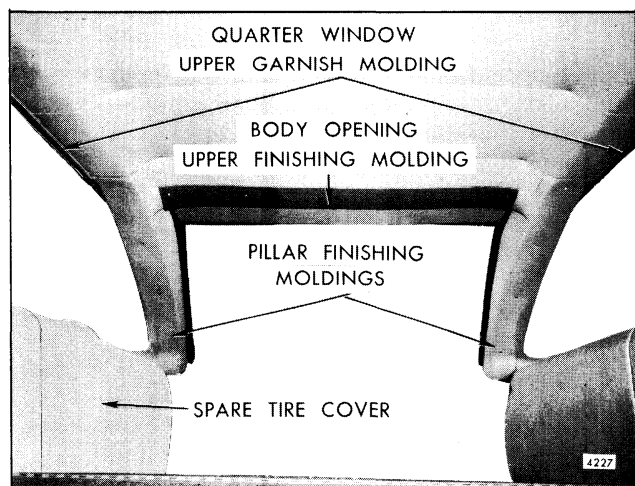


Fig. 7-86-Body Rear Finishing Moldings

2. Remove screws securing inner filler strip section and remove filler strip (Fig. 7-85, Section A-A).
3. To install, reverse removal procedure.

## TAIL GATE BOTTOM DRAIN HOLE SEALING STRIPS

### Removal and Installation

1. With tail gate in the closed position, remove back body lower housing access hole covers (Fig. 7-87).

**WARNING:** WHEN PERFORMING TAIL GATE SERVICE OPERATIONS THROUGH ACCESS OPENINGS IN BODY REAR LOWER HOUSING (FIG. 7-87), PLACE BODY TAPE OVER TAIL GATE OPENING KEY CYLINDER TO PREVENT INADVERTENT OPERATION OF THE TAIL GATE.

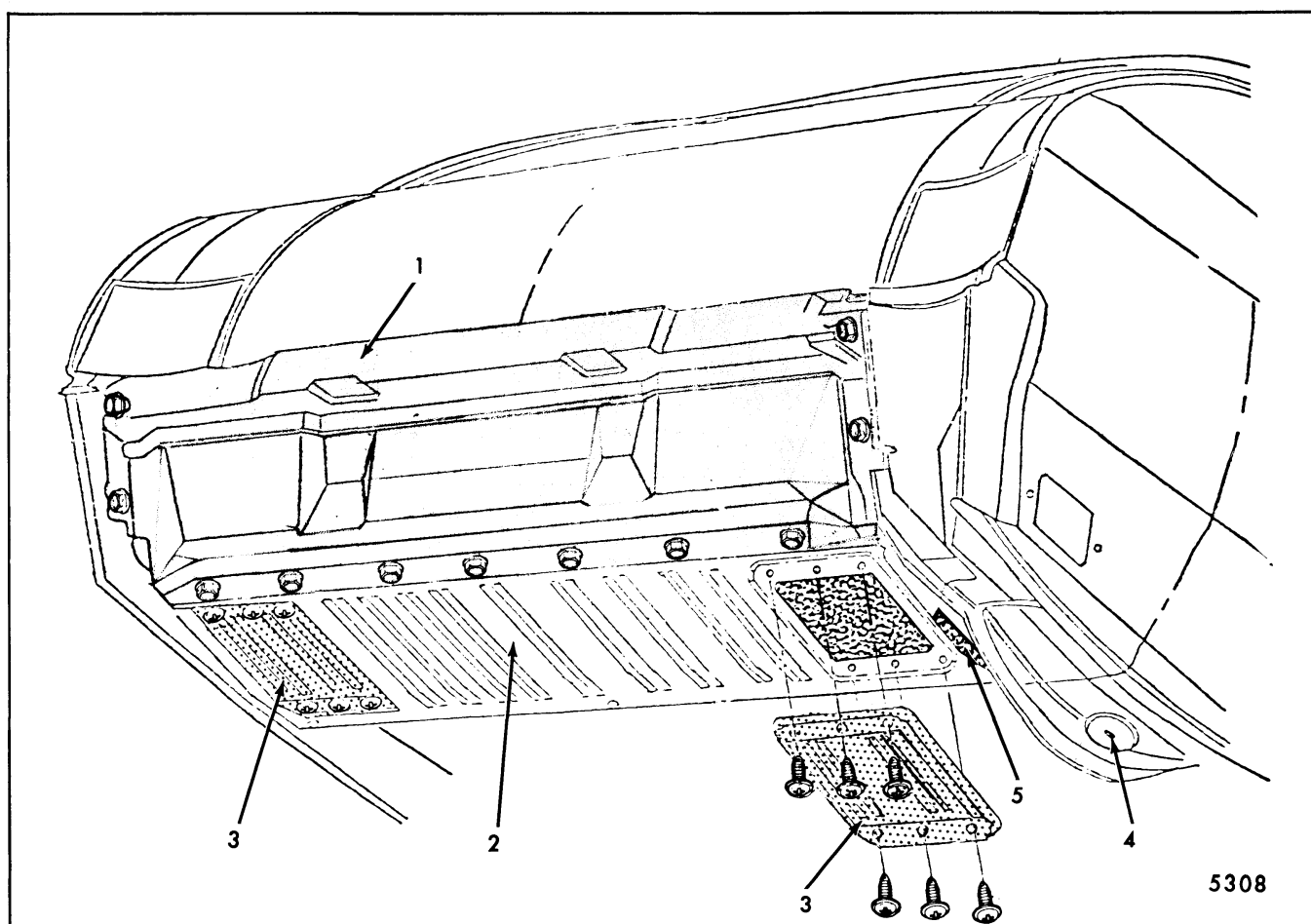


Fig. 7-87-Body Rear Upper and Lower Housing Components

- |                            |                            |  |  |
|----------------------------|----------------------------|--|--|
| 1. Back Body Upper Housing | 2. Back Body Lower Housing | 3. Back Body Lower Housing Access Covers | 4. Spare Tire Well Weep Hole             |
|                            |                            |  | 5. Right Corner Lower Housing Drain Slot |

2. Working through lower housing access holes, detach fastener at each end of the strip and remove sealing strip.
3. To install, reverse removal procedure.

## **BACK BODY LOWER HOUSING ASSEMBLY**

### **Description**

The back body lower housing assembly, an integral component of the body, serves as a storage area for the tail gate when the gate is lowered (Fig. 7-87). It is considered a "wet" area because it accepts water drained from inside the tail gate assembly as well as water that passes the filler strips between the tail gate outer panel and the upper housing. The lower surface of the housing is designed with a slope toward a drain slot on the right side. The back body upper housing which is bolted to the rear section of the lower housing, serves to enclose the tail gate storage area and provide support for rear bumper face bar attachments. Two access covers are secured to the underside of the lower housing and are provided to permit servicing the tail gate components contained therein.

### **Removal and Installation**

1. Remove rear bumper face bar.
2. Remove bolts securing back body upper housing to lower housing and remove the upper housing.
3. To install, reverse removal procedure.

## **TAIL GATE INNER FINISHING PANEL**

### **Description**

The tail gate inner finishing panel is sealed around its periphery and is attached by screws; thus a separate water deflector is not required. Nitrile foam tape is applied along the side and bottom of the finishing panel and another strip is applied to the upper surface of the tail gate inner panel to complete the seal (Fig. 7-88). A 3 inch gap in the seal is specified at the upper outer corners to permit water that may bypass the tail gate belt weatherstrip to be channeled into the inner panel drain slots at the lower edge of the gate.

### **Removal**

1. Remove screws securing inner panel to tail gate.
2. With a flat-bladed tool carefully break bond sealing inner panel to tail gate and remove panel.

### **Installation**

1. Inspect finishing panel sealing strip and repair if necessary, with nitrile tape or equivalent (adhesive backed closed cell foam tape - 1/8 inch thick and approximately 1 inch wide).
2. Install tail gate inner panel to tail gate and press firmly around periphery.
3. Apply body caulking to panel attaching screw threads and install screws.

## **TAIL GATE WINDOW SYSTEM**

### **Description**

The tail gate window is physically independent of the tail gate in the sense that all glass support and operating components are mounted in the body shell rather than in the tail gate.

The window motor, mounted to the rear of the spare tire well in the right quarter area, delivers torque to the window regulator assembly through a drive cable. The window regulator, in turn, drives another cable that is attached to the right upper glass roller support, thus moving the glass along the guide cams (Fig. 7-82).

## **TAIL GATE WINDOW ASSEMBLY**

### **Description**

The tail gate window assembly consists of a solid tempered safety plate glass with a pressed-on upper sash channel. Attached to the upper sash channel is a window lift spring and silencer. A roller support is bolted to each corner of the glass. With this design, the tail gate glass, roller supports and upper sash channel (with or without lift spring) are removed from the body opening as a unit. Replacement glass and roller supports are assembled as a bench operation.

### **Removal and Installation**

1. Remove finishing moldings from right and left pillars, from upper section of back body opening and remove upper and right side inner filler strips (Figs. 7-85 and 7-86).
2. Raise tail gate window and lower tail gate.
3. Carefully detach back body opening weatherstrip sculptured belt detail sections to approximately 5" below beltline. Rotate detached

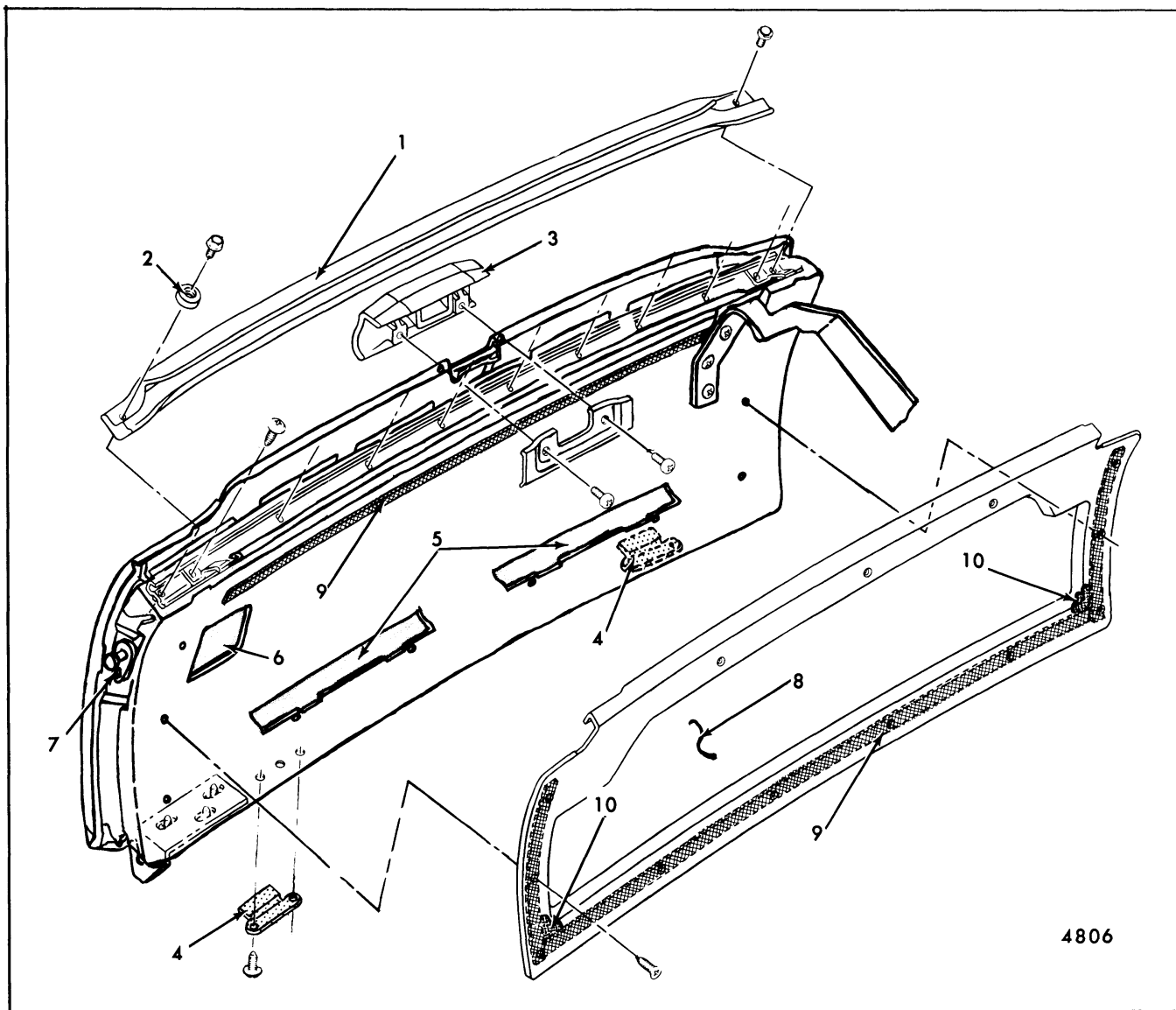


Fig. 7-88-Tail Gate Finishing Panel Sealing

- |  |  |                                |   |
|--|--|--------------------------------|---|
| 1. Tail Gate Belt Weatherstrip                 | 3. Tail Gate Grip Handle - Manual Tail Gate Only | 6. Lock Striker Access Hole    | 9. Nitrile Tape (1/8" x 1" closed cell, self-adhesive, foam type) |
| 2. Tail Gate Up-Stop - Electric Tail Gate Only | 4. Tail Gate Drain Hole Sealing Strip            | 7. Lock Striker                | 10. Body Caulking Material  |
|  | 5. Tail Gate Inner Panel Drain Slots             | 8. Tail Gate Inner Panel Cover |   |

weatherstrip areas outboard to allow window clearance. Tape weatherstrip sections to body exterior (Fig. 7-89).

- On power tail gate styles, lower window fully. On manual tail gate styles, manually snap lock bolt into locked position and lower window fully.

**NOTE:** On electrically heated back windows, on left side at upper left roller assembly, detach

connector at bus bar and detach harness fastener from roller assembly (Fig. 7-100).

**CAUTION:** Maintain control of spiral electrical harness at rear of roof with body tape, or other suitable means to prevent the extended harness from recoiling into the roof inner construction.

- Using adjustable pliers, detach spring from window upper sash channel (at center) and move spring to right side of body to relax spring ten-

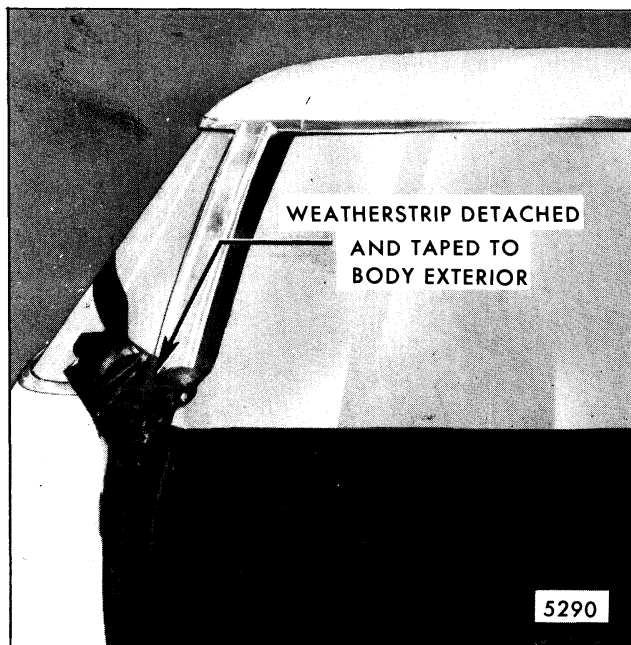


Fig. 7-89-Body Opening Weatherstrip Detachment for Window Removal

sion. Avoid detachment of spring from window guide cam at front (Fig. 7-90).

6. Remove drive cable flag retainer screw and move flag retainer inboard out of engagement with flag (Fig. 7-93).
7. While supporting glass, remove tail gate window down-travel stop(s) (Fig. 7-91) and carefully remove window.

**NOTE:** If additional clearance is required, adjust rear of guide cams down.

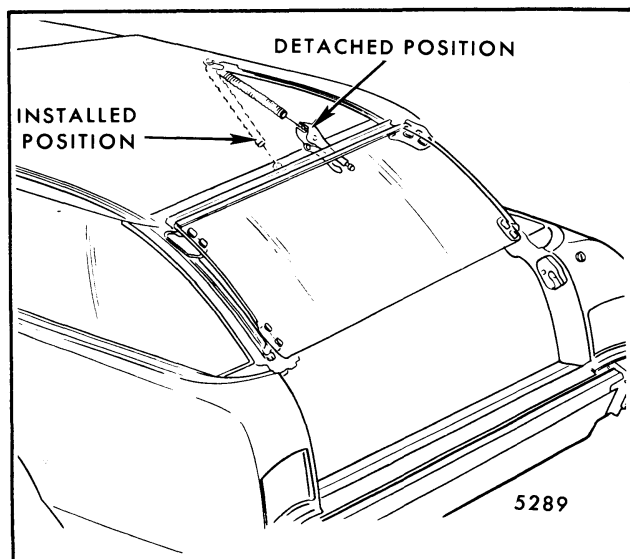


Fig. 7-90-Window Lift Spring Detachment

8. To install, reverse removal procedure.

Tail gate window components are illustrated in Figure 7-92. Specified torque for the roller support-to-glass bolts is 72 inch lbs.

### Adjustment

Fore and aft adjustment of window for proper back body opening weatherstrip contact is made by adjusting both right and left window guide cams vertically at rear and midway attaching locations.

A cocked window adjustment is controlled by loosening and rotating the right upper roller support in desired direction (Fig. 7-93).

Window down-travel is controlled by an adjustable stop in lower end of window right guide cam for manual tail gates and both guide cams for power operated tail gates (Fig. 7-91).

## TAIL GATE WINDOW REGULATOR ASSEMBLY

### Description

The tail gate window regulator assembly is mounted on the inner surface of the right hand back body pillar and is concealed by the spare tire cover (Fig.

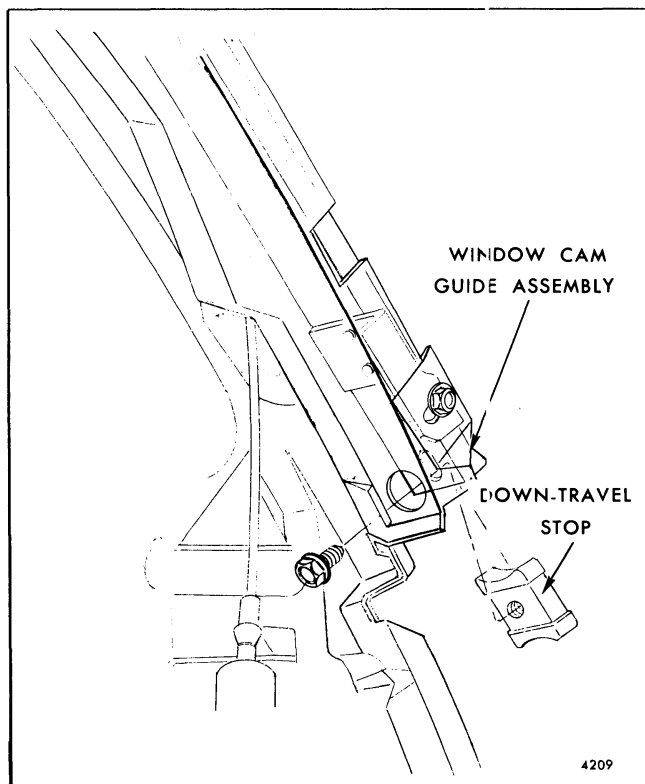


Fig. 7-91-Tail Gate Window Down-Travel Stop



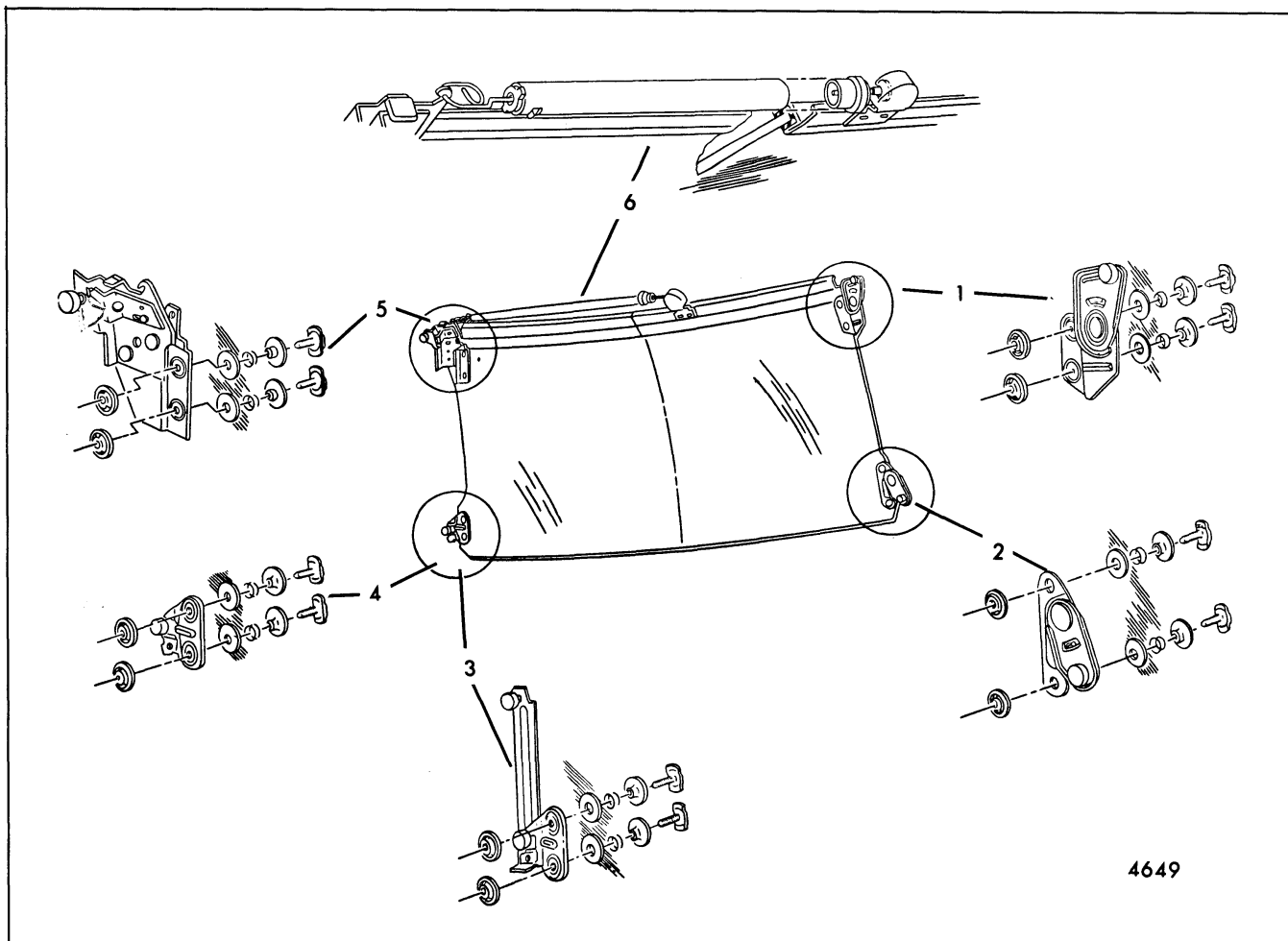


Fig. 7-92-Tail Gate Window Components

- |  |   |  |   |
|--|---|--|---|
| 1. Window Guide Roller Assembly - Upper Left | 3. Window Guide Roller Assembly - Lower Right (Manual Gate) | 4. Window Guide Roller Assembly - Lower Right (Power Gate) | 5. Window Guide Roller Assembly - Upper Right |
| 2. Window Guide Roller Assembly - Lower Left |   |  | 6. Window Lift Spring and Silencer            |

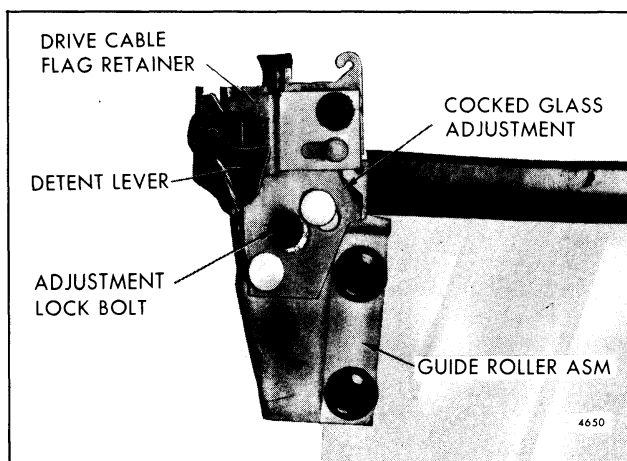


Fig. 7-93-Window Guide Roller Assembly - Upper Right

7-94). A rubber-coupled gear drive within the regulator transfers torque delivered by the window motor to the window drive cable. When the window is lowered the drive cable is drawn through the regulator and into a storage conduit connected to the lower end of the regulator. Reverse direction of the drive cable raises the window.

### Removal and Installation

1. Remove spare tire cover and spare tire.
2. Disengage window motor cable at window regulator assembly (Fig. 7-94).
3. Disengage window drive cable clip at upper end of regulator and remove cable storage conduit at lower end of regulator.

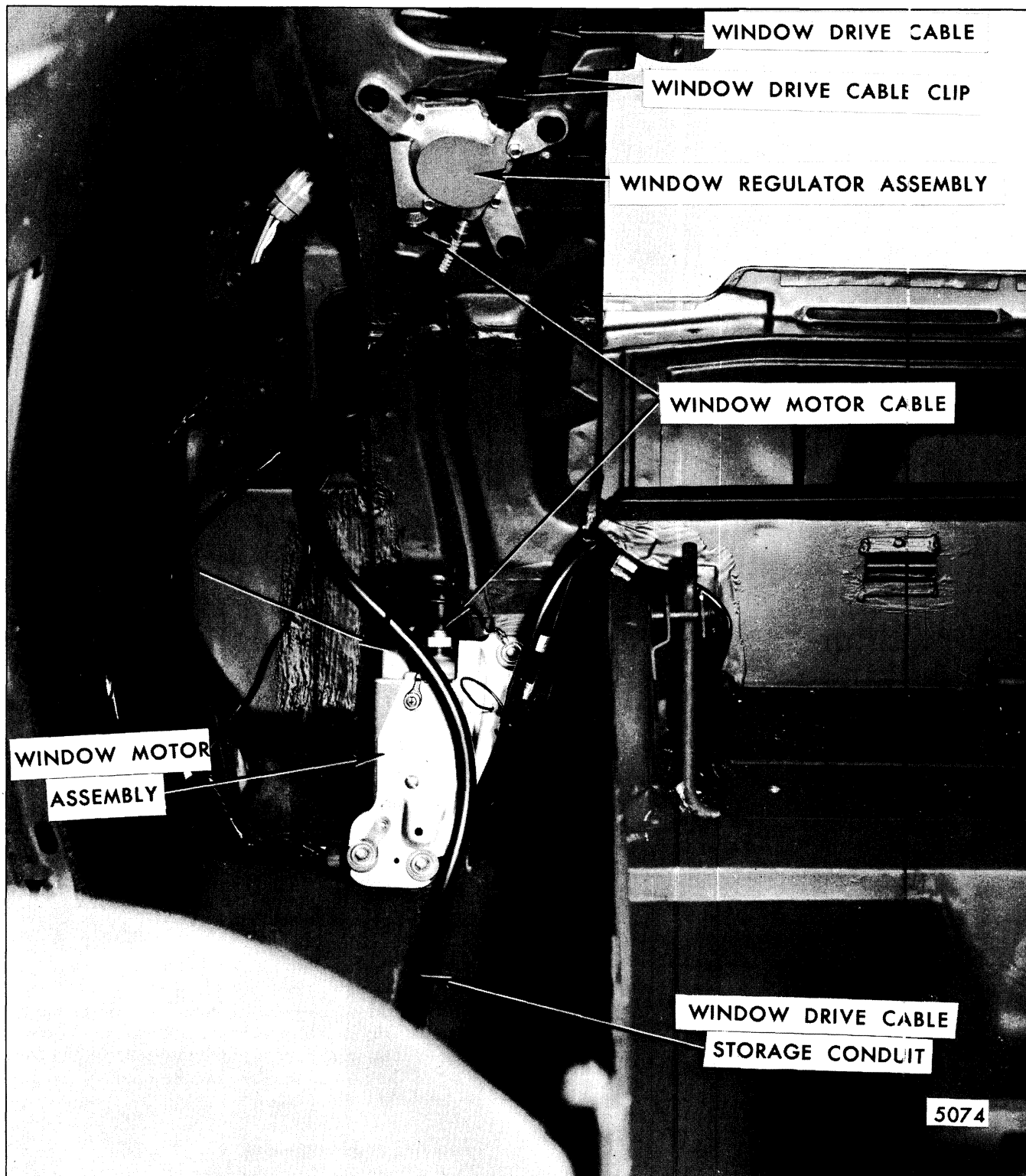


Fig. 7-94-Tail Gate Window Motor and Regulator Installation

4. Remove three regulator attaching screws and rotate regulator clockwise off lower end of drive cable.
5. To install, reverse removal procedure.

### TAIL GATE WINDOW MOTOR ASSEMBLY

#### Description

The tail gate window motor is secured to a mounting plate and in turn, the plate is bolted to the inner

surface of the right hand back body pillar behind the spare tire cover (Fig. 7-94). Rubber cushions insulate the plate from body metal, thereby requiring a separate ground strap to complete the motor circuit. Refer to the Electrical Section of this manual for details concerning the window motor and circuit.

### Removal and Installation

1. Remove spare tire cover and spare tire.
2. Disconnect motor electrical lead and disengage cable at upper end of motor (Fig. 7-94).
3. Remove motor mounting plate attaching screws and remove plate and motor assembly.
4. Disassemble motor from mounting plate as a bench operation.
5. To install, reverse removal procedure.

## TAIL GATE WINDOW MOTOR CABLE ASSEMBLY

### Description

Torque is delivered from the motor to the window regulator by a cable approximately 13 inches long. The cable is routed behind the basic body inner panel; however, access to each end of the cable for disconnect purposes is provided at the motor and regulator mounting locations (Fig. 7-94).

### Removal and Installation

1. Remove spare tire cover and spare tire.
2. Disengage cable at motor and at window regulator assembly and remove cable.
3. To install, reverse removal procedure.

## TAIL GATE WINDOW GUIDE CAM - RIGHT OR LEFT SIDE

### Description

The window operates within a cam type guide on each side of the body (Fig. 7-82). The left hand guide consists of a cam and attaching provisions. The right hand guide includes a cam, attaching provisions, an additional channel adjacent to the cam for the window drive cable and safety provisions specific to the manual tail gate. Each guide is concealed at the pillar locations by pillar finishing moldings and inner filler

strips. The forward end of each guide extends into the space between the roof inner and outer panels.

### Removal and Installation

1. Raise tail gate window and lower tail gate. On manual gates, snap tail gate lock to closed position.
  2. Remove rear body pillar finishing moldings, right pillar inner filler strip, right quarter window upper garnish molding (left side also if left guide cam is to be removed) and body opening upper finishing molding and filler strip.
  3. Detach back body opening weatherstrip sculptured belt detail sections and tape to body exterior as previously described (Fig. 7-89).
  4. Detach headlining over quarter glass on right side (left side also if left guide cam is to be removed) sufficiently to reveal access hole at forward attaching location of window guide cam (Fig. 7-97).
  5. Through access hole described in Step No. 4, transfer window assist spring from retainer on window guide cam to hook on window right upper roller support (Fig. 7-96).
  6. Through same access hole, remove drive cable flag retainer bolt and move flag retainer inboard out of engagement with flag. Secure flag in full forward position with a metal screw.
  7. Lower window to point where glass right upper roller detent lever engages either of two notches in right guide cam (Figs. 7-93 and 7-99).
- NOTE:** When drive cable flag is detached from right upper roller assembly, roller detent lever is released and will engage guide cam notches when glass is manually lowered.
8. Disengage roller detent lever at guide cam notches and lower glass to down-travel stop(s).
  9. While supporting glass, remove down-travel stop(s) and remove glass.
  10. For removal of right guide cam, detach and remove window regulator as previously described. Remove guide cam attaching bolts, move guide assembly forward to clear pillar access hole with drive cable and withdraw guide from body (Fig. 7-97).

**NOTE:** On styles equipped with a manual tail gate disengage upper end of window stop cable and clip assembly prior to removing guide attaching bolts (Fig. 7-95).

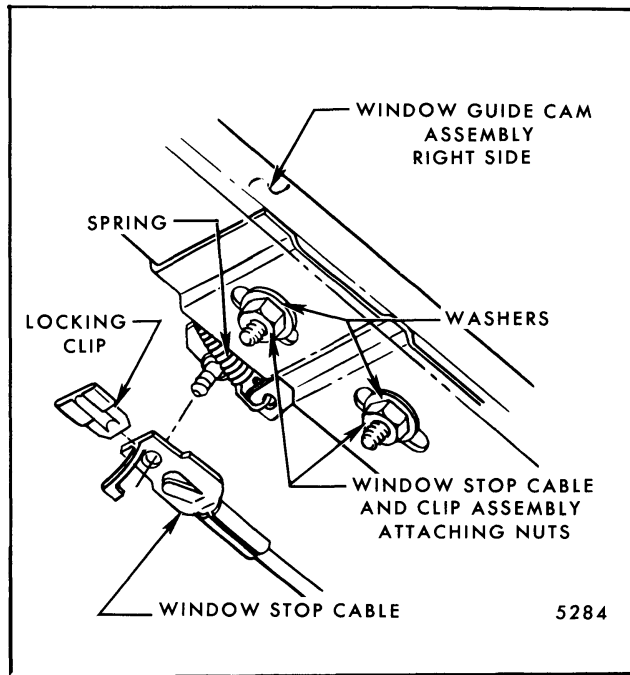


Fig. 7-95-Window Stop Cable and Clip Assembly Attachment

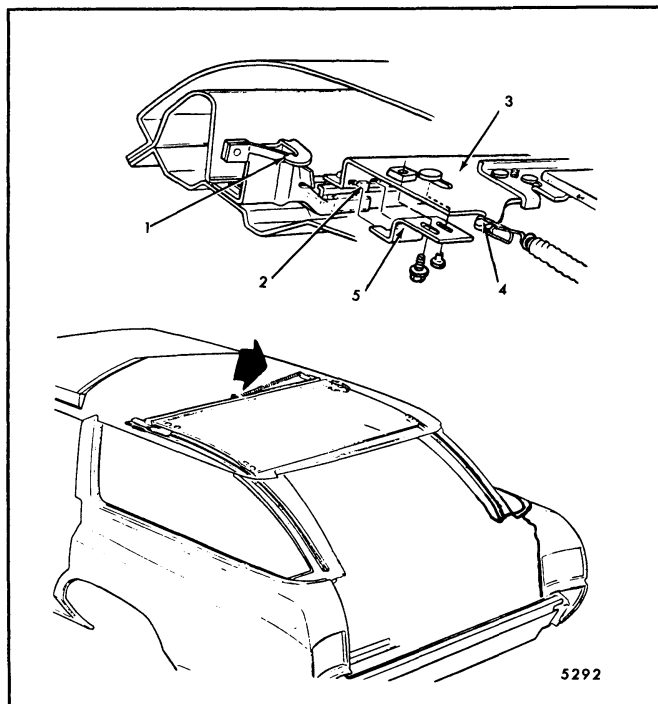


Fig. 7-96-Drive Cable Flag Retainer and Window Lift Spring Details

- |  |   |
|--|---|
| 1. Window Lift Spring Retainer on Guide Cam (Operating Position) | 4. Window Lift Spring Hook on Roller Assembly (Position for Window Removal) |
| 2. Drive Cable Flag  | 5. Drive Cable Flag Retainer (Not Removable)                                |
| 3. Window Guide Roller Assembly                                  |   |

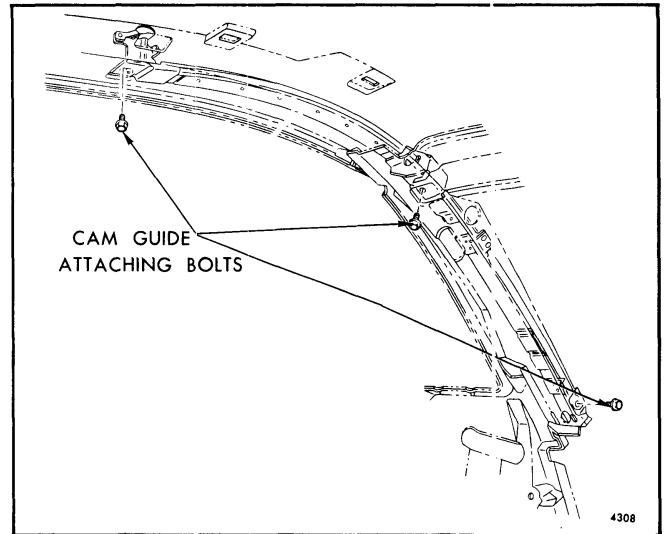


Fig. 7-97-Tail Gate Window Right Guide Cam Attachment

11. For removal of left guide cam, remove guide attaching screws and withdraw guide from body (Fig. 7-98).
12. To install either guide, reverse removal procedure.

## TAIL GATE WINDOW DRIVE CABLE

### Description

The window drive cable consists of a stranded wire core with an integral spiral wire exterior. The spiralled character of the cable surface meshes with the rubber-coupled gear drive of the window regulator resulting in fore-aft motion of the drive cable. The cable is confined within a channel of the right guide

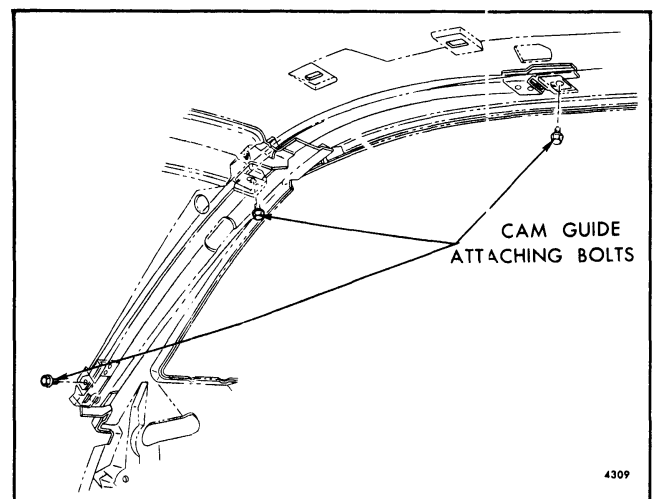


Fig. 7-98-Tail Gate Window Left Guide Cam Attachment

cam from the guide forward end to the cable-to-guide cam attaching bracket (View "B", Fig. 7-99). From this point rearward to the regulator the cable passes through a conduit for routing under the guide cam and into the back body pillar. The forward end of the drive cable includes a metal tab (or flag) by which attachment to the glass hardware is made.

## Removal and Installation

1. Remove tail gate window as previously described.
2. Remove window regulator as previously described.
3. Remove screws securing drive cable conduit to guide cam (View "B", Fig. 7-99).
4. Lower cable conduit sufficiently to allow drive cable to be lowered and cleared of guide cam channel.
5. Withdraw cable from conduit.
6. To install, reverse removal procedure.

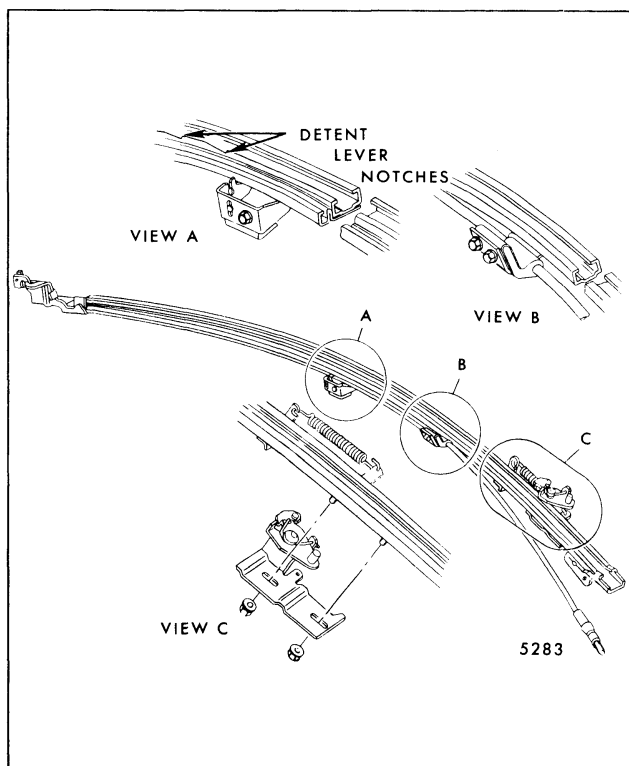


Fig. 7-99-Window Right Guide Cam and Drive Cable Details

- |  |   |
|--|---|
| A. Right Guide Cam<br>Center Attachment                    | C. Window Stop Cable<br>and Clip<br>Assembly-to-Guide<br>Cam Attachment |
| B. Window Drive<br>Cable-to-Guide Cam<br>Attaching Bracket |   |

**NOTE:** Drive cable conduit removal requires removal of the right guide cam from the body. The conduit is then removed as a bench operation.

## WINDOW STOP CABLE AND CLIP ASSEMBLY- (Manual Tail Gate Only)

### Description

The window stop cable and clip assembly is designed to prevent full lowering of the tail gate window (approximately 8" above the beltline) until the tail gate is fully closed (View "C", Fig. 7-99). In addition, this assembly prevents mechanical release of the tail gate until the window is raised approximately 8 inches above the beltline. This feature is not required with the power tail gate option.

### Removal and Installation

1. Remove window right guide cam as previously described.
2. Remove spring and nuts from stop assembly as a bench operation.

**NOTE:** Spring is used to self locate stop assembly on guide cam during adjustment.

3. Through access hole at window regulator mounting area dis-engage window stop cable at lock lever and withdraw cable. (See Fig. 7-110 window and gate control section).

**NOTE:** Tie a suitable length of cord to lower end of cable to facilitate installation.

4. To replace cable and stop assembly, reverse the removal procedure.

**NOTE:** Tighten stop assembly at rearward end of slots in guide cam to facilitate installation of stop cable.

### Adjustment

1. Operate tail gate lock to unlatched position.
2. Loosen stop assembly attaching nuts and allow spring to locate assembly on guide cam, this will remove slack from cable and position bell crank. Tighten stop attaching nuts (View "C", Fig. 7-99).
3. Operate glass with tail gate lock in both locked and unlocked positions to check operation of stop cable and clip assembly. Window stop cable

and clip assembly should be adjusted to function as follows:

- A. Control knob on body exterior should not release tail gate until window raises sufficiently to clear bell crank on stop cable and clip assembly (approximately 8" above belt-line).
- B. With tail gate open, window should contact bell crank pin on stop cable and clip assembly approximately 8" above beltline when lowered with instrument panel switch.

## ROLLER ASSEMBLY - TAIL GATE WINDOW

### Description

A roller assembly is used at each corner of the glass to control the path of travel along the window guide cams (Fig. 7-92). The left side rollers are staked to pivots and follows the path established by the right side roller assemblies which are non-pivoting. Two right hand lower roller assemblies are required, one for the manual tail gate and another for power tail gates. The right hand upper roller also assumes a fixed position, but includes an adjustable roller plate for a cocked glass correction.

### Removal and Installation

1. Remove tail gate window as previously described.
2. Remove roller assembly as a bench operation (Fig. 7-92).
3. To install, reverse removal procedure.

**NOTE:** Torque roller assembly to glass attaching bolts to 72 in. lbs.

## TAIL GATE WINDOW DOWN-TRAVEL STOP(S)

### Description

The tail gate window down-travel stops provide positive limits for glass contact to the tail gate belt weatherstrip (Fig. 7-91). One stop only is required on the right side for units equipped with the manual tail gate. Two stops (right and left) are required for power tail gate application.

### Removal and Installation

1. Remove rear pillar finishing molding (both sides for power gate; right side only for manual gate).

2. Remove down-travel stop attaching screw in lower end of window cam guide and remove stop(s) (Fig. 7-91).
3. To install, reverse removal procedure. Adjust stop(s) as subsequently explained.

### Adjustment

1. Loosen down-travel stop attaching screw and lower tail gate window for desired contact with tail gate belt weatherstrip.
2. From body interior, adjust down-travel stop upward for firm contact against glass lower roller and tighten stop attaching screw. Make minor adjustments if required (Fig. 7-91).

## TAIL GATE WINDOW ASSIST SPRING AND SILENCER

### Removal and Installation

1. Remove back body opening upper finishing molding and filler strip (Fig. 7-86).
2. Remove right quarter glass upper garnish molding.
3. Detach headlining over quarter glass on right side sufficiently to reveal access hole at forward attaching location of window guide cam (Fig. 7-96).
4. With glass in down position detach spring from window upper sash channel and move spring to right side of body to relax spring tension (Fig. 7-90).
5. Through access hole in roof inner panel detach spring from retainer on guide cam (Item "1", Fig. 7-96) and withdraw spring rearward from body.
6. To install, reverse removal procedure.

## HEATED TAIL GATE WINDOW REAR WIRE HARNESS ASSEMBLY

### Description

A coiled harness serves the heated window circuit requirements. This allows the harness to extend when the window is closed and recoil when the window is raised (Fig. 7-100). A plastic tube integral with the harness guides the harness during recoil.

# Removal and Installation

1. Remove back body opening upper trim finishing molding and inner filler strip (Fig. 7-86).
2. Remove left rear pillar finishing molding and inner filler strip.
3. Remove left quarter window upper garnish molding and detach headlining over left quarter glass sufficiently to reveal access hole at forward end of tail gate window left guide cam.
4. Disengage heated window rear harness at front junction and secure a 4 ft. cord to harness to facilitate installation (Fig. 7-100).
5. Lower tail gate window to full down position for access to harness terminal on glass.

**NOTE:** On manual gates, snap tail gate lock to closed position in order to lower window fully.

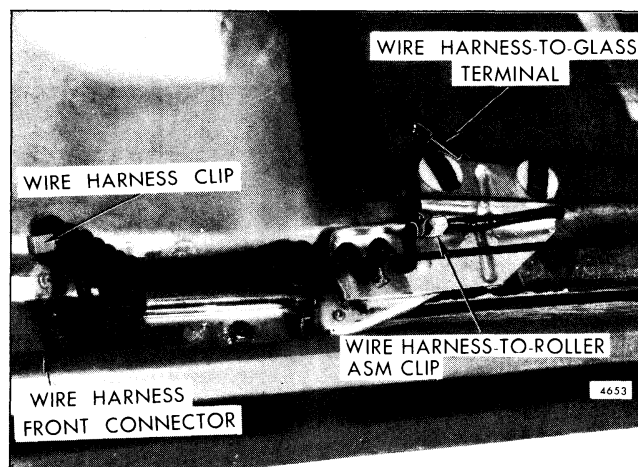


Fig. 7-100-Heated Window Rear Wire Harness - Window Up (Roof Outer Panel Removed for Illustrative Purposes)

6. Withdraw harness from body leaving installing cord in body cavity.
7. To install, reverse removal procedure.

## RETRACTABLE TAIL GATE WINDOW DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Window cannot be raised. Window motor operative.	<ol style="list-style-type: none"><li>1. Window motor cable disconnected or broken.</li><li>2. Possible inoperative window regulator or disconnected or broken window drive cable.</li></ol>	<p>(A) Check window motor drive cable. Re-connect or replace.</p> <p>(A) Detach window drive cable storage conduit from regulator to expose drive cable. With helper actuating window switch for "up" cycle, observe exposed drive cable for movement. If no movement occurs, remove regulator and dis-assemble for inspection.</p> <p>(B) If cable movement occurs in above test at regulator, repeat test while observing upper (flag) end of drive cable at glass right upper roller assembly. This will determine whether drive cable is disconnected or broken.</p>

CONDITION	APPARENT CAUSE	CORRECTION
<p>2. Window cannot be lowered. Window motor operative.</p>	<p>1. Window motor cable disconnected or broken.</p> <p>2. Possible inoperative window regulator, disconnected or broken window drive cable.</p>	<p>(A) Check window motor cable. Re-connect or replace.</p> <p>(A) Detach window drive cable storage conduit from regulator. With helper actuating window switch for "down" cycle, observe if drive cable exits lower end of regulator. If drive cable appears, drive cable is disconnected at window upper roller or cable is broken. Re-connect or replace cable.</p> <p>(B) If drive cable does not appear, grasp window and attempt manual lowering. If window lowers and cable exits at lower end of regulator, remove regulator and disassemble for inspection.</p>
<p>3. Window cannot be lowered. Window motor operative. Window regulator noisy.</p>	<p>1. Window drive cable out of engagement with regulator drive gear.</p>	<p>(A) Attempt manual lowering of window sufficiently to cause engagement of window drive cable in regulator. If engagement occurs, check window up-travel stop on window right guide cam or check length of drive cable.</p> <p>(B) If engagement of cable does not occur check cable flag to window upper right roller attachment or remove and disassemble regulator for inspection.</p>



CONDITION	APPARENT CAUSE	CORRECTION
4. Window cannot be raised or lowered. Window motor inoperative.	1. Possible lock and release switch malfunction.  2. Possible window electrical circuit problem.	(A) Refer Window and Tail Gate Control System Diagnosis Chart.  (A) Refer Electrical Section for Tail Gate Window Circuit Diagnosis.
5. Window lowers fully with tail gate open or tail gate releases before window raises beyond 8" above belt. (Manual tail gate)	1. Stop cable and clip assembly out of adjustment on right guide cam.  2. Cable of above assembly disconnected at either end or broken.	(A) Align stop cable and clip assembly.  (A) Re-connect cable or replace cable if broken.

## TAIL GATE SYSTEM

### Description

The tail gate lowers into a storage area beneath the load floor and is guided through the path of its travel by right and left lower guide channel assemblies and a regulator lift arm and hinge at the upper left corner. Simultaneous movement of right and left sides is assured by a synchronizing torque tube assembly. Operating effort is reduced by a torque rod assembly that acts upon the regulator lift arm and hinge (Fig. 7-105).

## TAIL GATE ASSEMBLY

### Description

The tail gate assembly is fabricated primarily of an inner and an outer panel with reinforcements provided at critical attachment locations. Since the tail gate window is independent of the gate, no hardware is required within the assembly. A single opening is provided at the right upper area of the tail gate inner panel for access to the striker attachment provisions (Fig. 7-107). A grip handle is provided at center of the beltline on manual tail gates only.

## Removal and Installation

**NOTE:** Refer to Figure 7-101 and prepare a 1/4" 20 x 1" fixture bolt to serve as a roller stop for subsequent removal steps. In addition, tape a doubled fender cover or equivalent to upper surface of bumper face bar to protect gate.

1. Raise tail gate to latched position and remove tail gate inner cover panel.

**WARNING:** MAINTAIN A FIRM GRIP ON TAIL GATE FOR SUBSEQUENT STEPS.

2. Remove regulator hinge arm-to-tail gate attaching screws. On manual tail gates, actuate control knob to unlock gate. Lower gate sufficiently to clear lock assembly and allow gate to pivot rearward approximately 45 degrees.
3. Insert fixture bolt and nut assembly into key slot at upper end of right channel guide assembly below roller to hold synchronizing tube assembly in position during tail gate removal (Fig. 7-101).
4. Scribe location of right lower roller support on tail gate and remove attaching bolts.

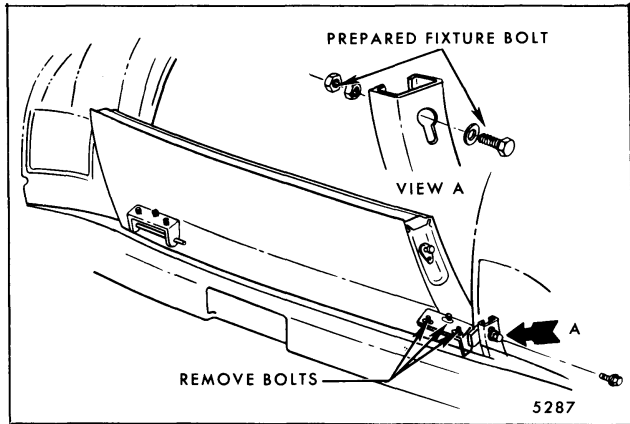


Fig. 7-101-Tail Gate Position For Removal

5. Move right side of tail gate rearward sufficiently to clear body opening. Then slide tail gate to right and out of engagement with left torque roller shaft to remove tail gate.
6. To install, reverse removal procedure.

**NOTE:** Remove fixture bolt from right channel assembly before raising tail gate to body position.

## TAIL GATE GUIDE CHANNEL ASSEMBLY - RIGHT OR LEFT

### Description

The tail gate guide channels, right and left, are mounted in the back body lower housing and establish

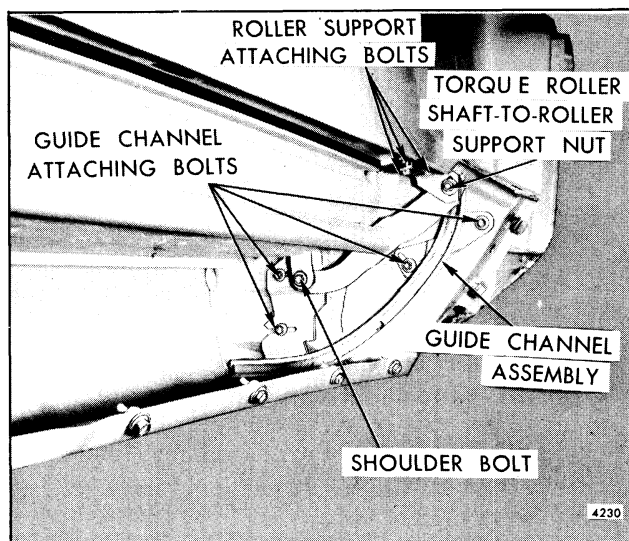


Fig. 7-102-Tail Gate Guide Channel Assembly - Right

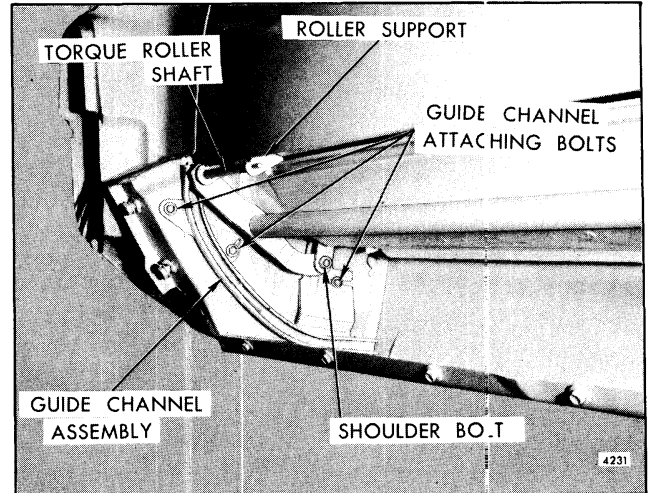


Fig. 7-103-Tail Gate Guide Channel Assembly - Left

lish path of travel for the tail gate (Fig. 7-104). Each guide channel assembly consists of a curved channel and mounting brackets. A pivot link is used at the rear of each assembly to accommodate the synchronizing torque tube. The guide channel bracket attaching holes are elongated to provide fore-aft adjustment for the lower portion of the gate (Figs. 7-82 and 7-104).

### Removal and Installation

1. Remove tail gate as previously described.
2. Working through opening between body and rear bumper, remove synchronizing tube-to-guide channel link shoulder bolt (Fig. 7-102 or 7-103).
3. Remove guide channel-to-body attaching bolts.
4. Disengage guide channel from tail gate lower roller and withdraw guide channel through opening between body and rear bumper.
5. To install, reverse removal procedure. Adjust guide channel fore or aft as required.

## TAIL GATE ROLLER SUPPORT - RIGHT OR LEFT

### Description

A torque roller and shaft engages the guide channel on each side of the body. The torque rollers and shafts in turn are connected to the bottom of the

tail gate by torque roller supports. The left torque roller support is mounted to a fixed location on the bottom of the tail gate. The right torque roller support is adjustable laterally with respect to the gate in order to allow cross-body adjustment of the gate. Additionally, the right torque roller support-to-roller shaft attaching hole is elongated vertically to provide a cocked tail gate adjustment (Fig. 7-102).

### Removal and Installation

1. Remove tail gate as previously described.
2. Remove left roller support as a bench operation. Remove right roller support from body by removing roller shaft-to-support attaching nut (Fig. 7-102).
3. To install, reverse the removal procedure. Right side roller only is adjustable laterally on tail gate and up-down on roller shaft.

## TAIL GATE SYNCHRONIZING TORQUE TUBE ASSEMBLY

### Description

A synchronizing torque tube assembly assures level operation of the tail gate through opening and closing

cycles. An arm on each end of the tube connects to a torque roller at the bottom of the tail gate (each side). The opposite end of the arm is connected to the guide channel link by a shoulder bolt (Figs. 7-82 and 7-104).

### Removal and Installation

1. Remove tail gate as previously explained.
2. Remove right and left synchronizing torque tube-to-guide channel link shoulder bolts (Fig. 7-104).
3. Scribe location of guide channels on body and remove rearward attaching bolts and loosen forward attaching bolts (Figs. 7-102 and 7-103).
4. Rotate guide channels downward at rear for clearance to allow disengagement of right and left torque rollers from upper end of guide channels (Fig. 7-104).
5. Remove synchronizing torque tube with torque rollers and shafts and right roller support intact.
6. If necessary, torque rollers and shafts and right roller support may be removed as a bench operation.

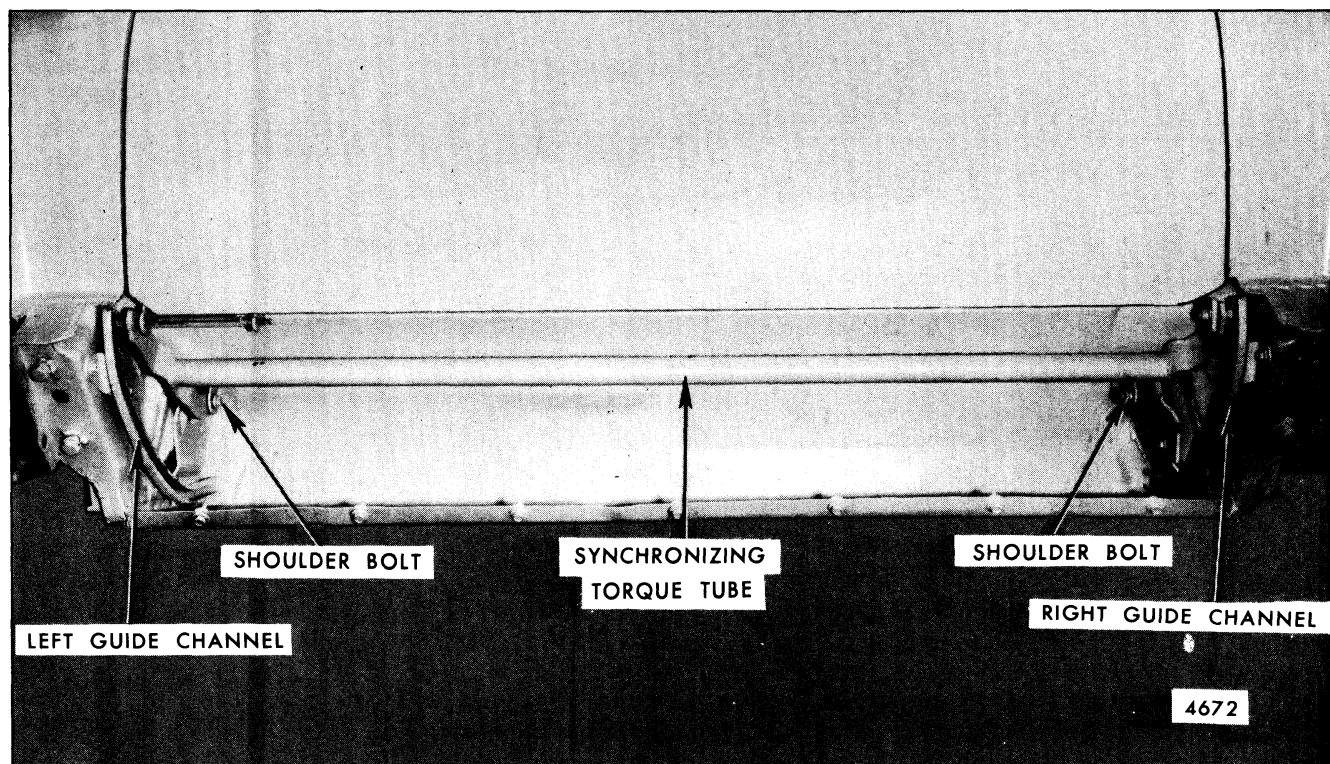


Fig. 7-104-Tail Gate Synchronizing Torque Tube and Guide Channels

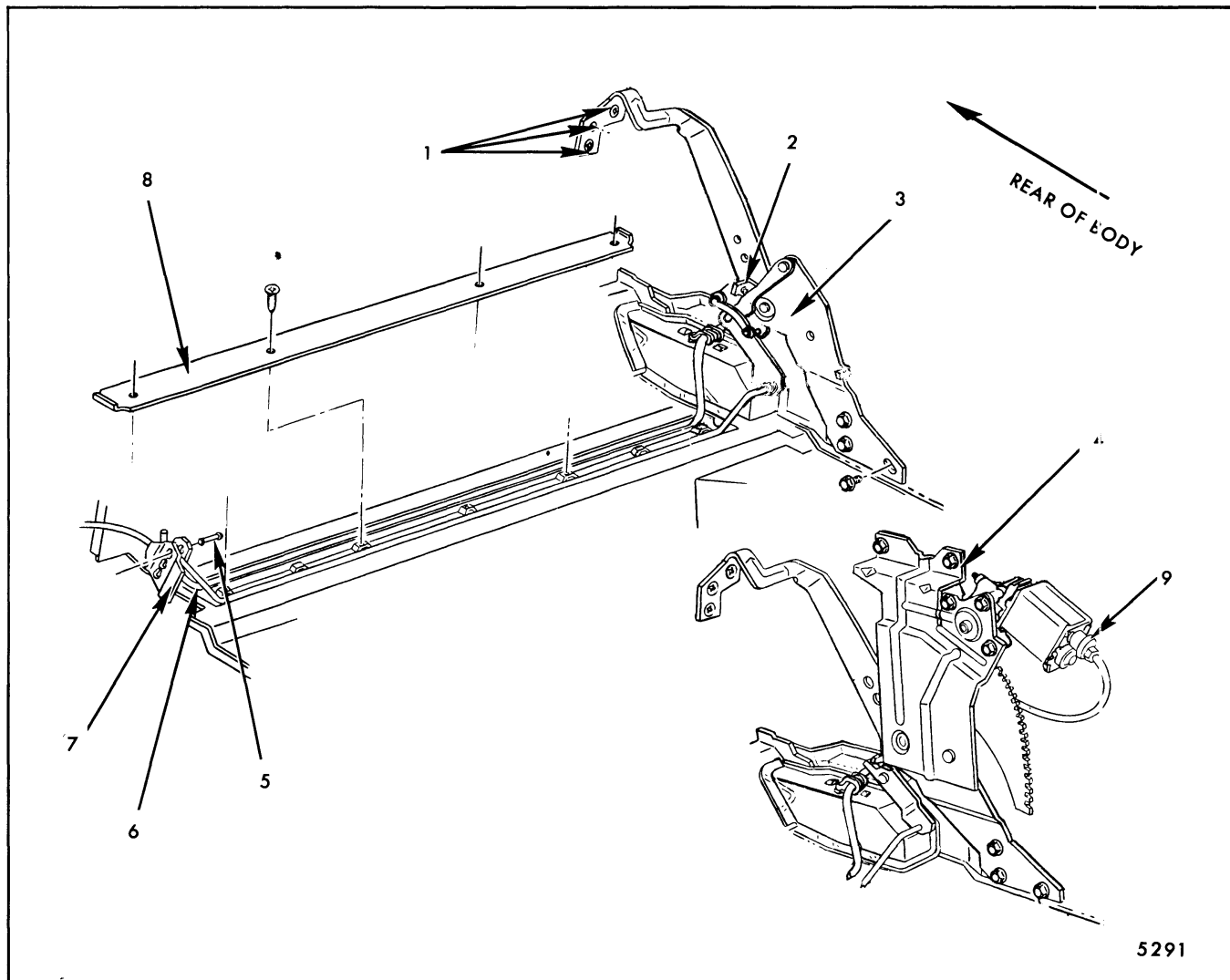


Fig. 7-105-Tail Gate Torque Rod and Hinge Arm Relationship

- |   |   |                             |                                      |
|---|---|-----------------------------|--------------------------------------|
| 1. Lift Arm Hinge-to-Tail Gate Attaching Screws | 3. Lift Arm Hinge Assembly - Manual                 | 5. Torque Rod Retaining Pin | 8. Torque Rod Cover Plate            |
| 2. Tail Gate Drop Adjusting Screw               | 4. Lift Arm Hinge and Regulator Assembly - Electric | 6. Torque Rod               | 9. Tail Gate Motor Harness Connector |
| 7. To install, reverse removal procedure.       |   |                             |                                      |

## TAIL GATE TORQUE ROD

### Description

The retractable tail gate torque rod provides a counterbalance force for the operating cycles of the gate resulting in decreased opening and closing effort. The adjustable end of the torque rod is located on the right side of the body under the rear load supports and is secured in one of three adjusting locations by a pin inserted above the rod and through a key slot in the torque rod retainer (Fig. 7-106).

### Removal and Installation

1. Lower tail gate and prop rear load floor in full open position.
2. Remove load floor supports to gain access to torque rod retainer and with tool J-23719 or equivalent, apply downward pressure on torque rod. Carefully remove torque rod pin and allow torque rod to rotate forward to a fully relaxed position (Fig. 7-106).

**WARNING: DO NOT REMOVE TORQUE ROD COVER PLATE UNTIL TORQUE ROD TENSION IS FULLY RELIEVED.**

3. Remove torque rod cover plate screws and remove cover plate (Fig. 7-105).
4. Withdraw torque rod from lift arm link and remove torque rod from body.
5. To install, reverse removal procedure.

### Adjustment

1. Engage end of torque rod with tool J-23719 or equivalent, apply downward pressure against rod and remove retaining pin (Fig. 7-106).
2. Place torque rod in desired location in torque rod retainer and insert retaining pin in key slot above torque rod.

**NOTE:** Torque rod should be adjusted to achieve tail gate cycling action that requires only minimal manual assist.

3. On manual tail gates adjust tail gate drop adjusting screw (Fig. 7-105) if necessary, so that tail

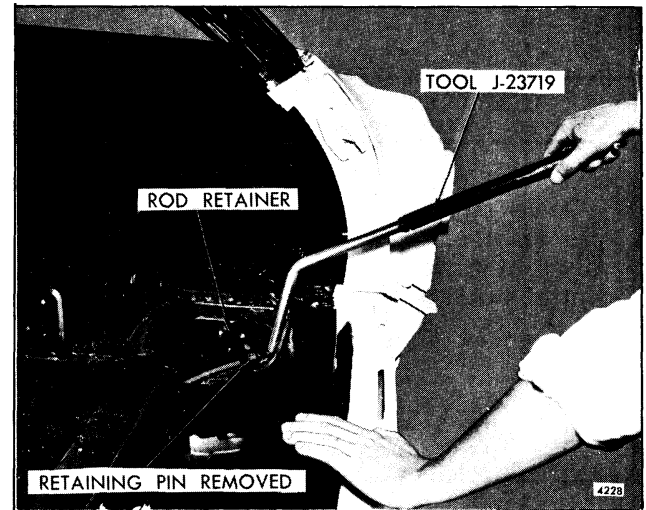


Fig. 7-106-Torque Rod Tool - Torque Rod Release or Adjustment

gate drops 3 to 6 inches after being released by the control knob.

### RETRACTABLE TAIL GATE DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. With window open, manual tail gate will not release from closed position.	<ol style="list-style-type: none"> <li>1. Swivel on switch pawl-to-lock lever rod positioned too high on link.</li> <li>2. Swivel on switch pawl-to-lock lever rod disconnected at lock lever.</li> </ol>	<p>(A) Adjust swivel down on rod sufficiently to trip lock lever.</p> <p>(A) Check swivel adjustment and condition of retaining clip on lock lever. Re-connect swivel.</p>
2. With window open, manual tail gate releases but will not drop sufficiently to clear lock.	<ol style="list-style-type: none"> <li>1. Tail gate drop adjusting screw positioned improperly.</li> </ol>	<p>(A) Position tail gate drop adjusting screw so that tail gate drops 3 to 6 inches when released.</p>
3. Manual tail gate requires excessive effort to raise.	<ol style="list-style-type: none"> <li>1. Torque rod improperly adjusted.</li> </ol>	<p>(A) Adjust torque rod down in retainer to reduce manual effort.</p>

CONDITION	APPARENT CAUSE	CORRECTION
4. Power tail gate operates from only one of two control switches.	1. Possible defective switch.  2. Possible tail gate circuit problem to affected switch.	(A) Check switch. Refer to checking procedures in tail gate portion of Electrical Section.  (A) Check circuit. Refer Electrical Section as above.
5. Power tail gate will not operate from either of two control switches.	1. Possible defective motor.  2. Possible tail gate electrical circuit problem.	(A) Check motor and/or tail gate electrical circuit. Refer Electrical Section.

## TAIL GATE LIFT ARM HINGE ASSEMBLY - MANUAL AND ELECTRIC

### Description

A lift arm and hinge assembly is mounted to the left quarter inner construction and to the left upper inner corner of the gate to provide raising and lowering effort. For power operated tail gates a motor and sector are added to the assembly. The assembly mounting holes are elongated to allow down-forward and aft-upward adjustment to the left side of the gate (Fig. 7-105).

### Removal and Installation

1. Remove left quarter rear trim panel.
2. Remove tail gate inner cover panel.
3. Remove regulator lift arm hinge-to-tail gate attaching screws and carefully lower tail gate. On power-operated units, disconnect wire harness at motor terminal (Fig. 7-105).
4. Remove tail gate torque rod as previously explained.
5. Mark location of lift arm hinge assembly on body and remove attaching screws. Remove regulator and lift arm hinge assembly from body.

6. To install, reverse removal procedure.

### Adjustments

The regulator and lift arm hinge assembly may be adjusted down-forward, aft-upward and rotated within the limitations of over-size attaching holes to the body.

**NOTE:** Make adjustments with torque rod disengaged at retainer on right side of body.

Assuming that all attaching bolts to body and tail gate are loose, proceed as follows:

1. Tighten regulator lift arm-to-tail gate attaching screws securely (Fig. 7-105).
2. With tail gate in full closed position, move tail gate fore or aft to achieve flush tail gate to body opening alignment. Secure regulator attaching bolts.
3. Secure torque rod in retainer, using tool J-23719 or equivalent, and operate gate through several up-down cycles. Repeat Step 2 if necessary.

**NOTE:** On manual tail gates, if original location of regulator and hinge assembly is changed, the tail gate drop adjusting screw should be readjusted. (Refer tail gate torque rod-adjustment).

## TAIL GATE LIFT ARM HINGE AND REGULATOR ASSEMBLY MOTOR

### Removal and Installation

1. With tail gate fully lowered, remove left quarter rear trim panel.
2. Detach wire harness at motor terminal and remove motor-to-regulator attaching bolts. Remove motor (Fig. 7-105).
3. To install, reverse removal procedure.

## TAIL GATE STRIKER ASSEMBLY

### Description

The tail gate striker assembly mounted on the right side of the gate provides fore-aft, up-down and cross-body adjustments. The assembly is designed to pivot from the lower attaching point so that fore-aft adjustment can be made without disturbing the height setting. Cross-body adjustment is made by loosening the striker pin jamb nut and turning the striker pin in the desired direction (Fig. 7-107).

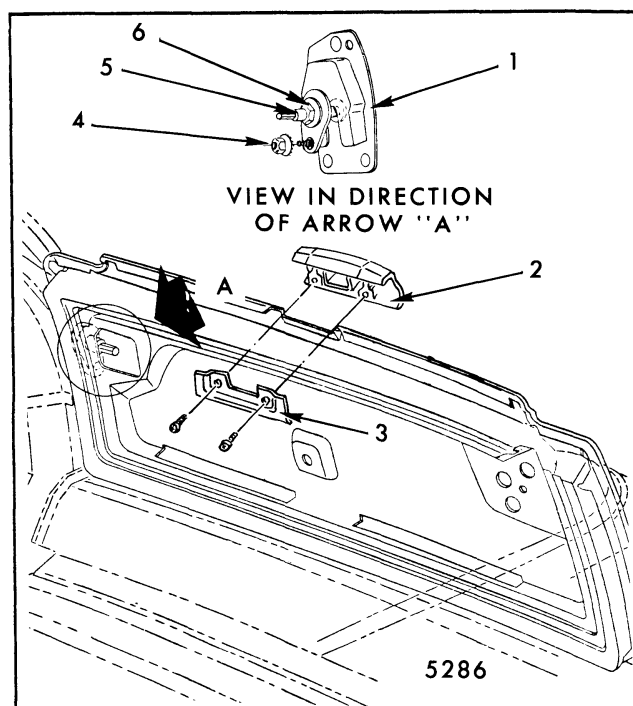


Fig. 7-107-Tail Gate Lock Striker and Grip Handle Assemblies

- |                      |                         |
|----------------------|-------------------------|
| 1. Lock Assembly     | 4. Striker Assembly Nut |
| 2. Grip Handle       | 5. Striker Pin          |
| 3. Grip Handle Cover | 6. Striker Pin Jamb Nut |

### Removal and Installation

1. Remove tail gate inner cover panel as previously described.
2. Lower tail gate as far as possible without obscuring tail gate inner panel access hole.
3. Secure striker assembly on tail gate exterior with an extension magnet or looped cord.
4. Through access hole in tail gate inner panel, remove striker assembly nut and striker pin jamb nut and washer (Fig. 7-107).
5. Withdraw striker assembly through gap between tail gate and body opening.
6. To install, reverse removal procedure.

### Adjustments

The tail gate striker is adjustable up-down and fore-aft. The striker pin is threaded into the striker plate

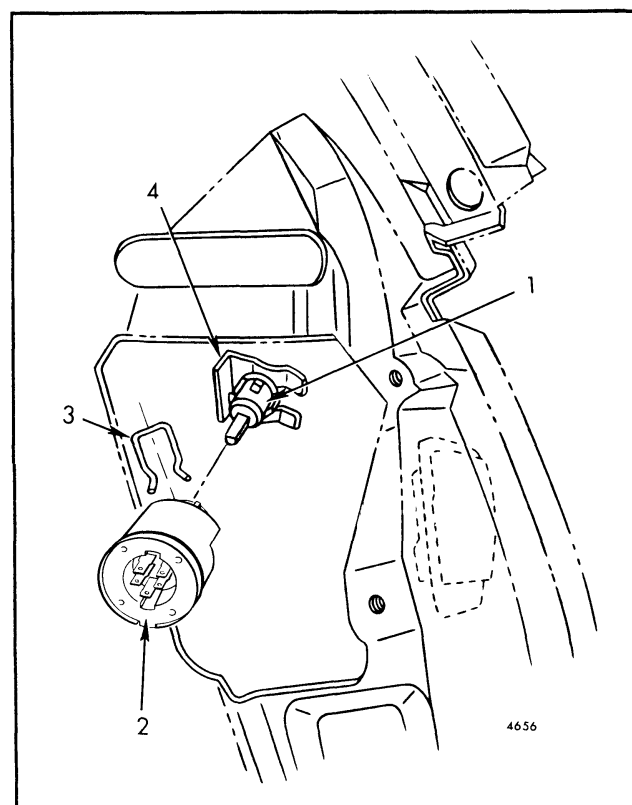


Fig. 7-108-Electric Window and Gate Switch Assembly

- |                                    |                                      |
|------------------------------------|--------------------------------------|
| 1. Lock Cylinder                   | 3. Switch-to-Cylinder Retaining Clip |
| 2. Electric Window and Gate Switch | 4. Lock Cylinder Retaining Clip      |

and is adjustable cross-body. All striker adjustments are made through the access hole in the tail gate inner panel.

To adjust the striker cross-body for proper engagement with tail gate lock, proceed as follows:

1. Engage hex end of striker with a suitable wrench and loosen striker pin jamb nut (Fig. 7-107).
2. Rotate striker pin for desired relationship with lock.
3. While holding hex end of striker in desired position, tighten striker pin jamb nut.

To adjust striker fore-aft or up-down, proceed as follows:

1. To achieve fore-aft adjustment only, loosen striker pin jamb nut while holding striker pin. Position striker and secure jamb nut.
2. For up-down adjustment loosen striker pin jamb nut and striker assembly nut. Position striker and tighten jamb nut and striker assembly nut.

## TAIL GATE LOCK ASSEMBLY

### Removal and Installation

1. Raise tail gate window and lower tail gate.
2. For manual tail gates remove spare tire cover and spare tire.

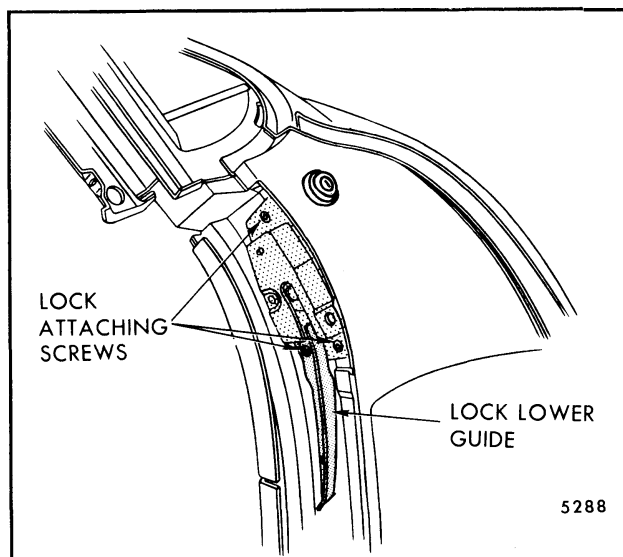


Fig. 7-109-Lock and Lock Lower Guide Attachment

3. Working around right pillar inner panel, disengage tail gate window stop cable and switch pawl rod at lock lever (Fig. 7-110).
4. For either manual or electric tail gates, remove lock attaching bolts at pillar facing and remove lock and lock lower guide (Fig. 7-109).
5. To install, reverse removal procedure.

## TAIL GATE OUTER PANEL GRIP HANDLE- (Manual Tail Gate Only)

### Removal and Installation

1. Remove screws securing tail gate outer panel grip handle and cover. Remove handle (Fig. 7-107).
2. To install, reverse removal procedure.

## TAIL GATE ADJUSTMENTS

The retractable tail gate is adjustable up-down, fore-aft and laterally within its body opening (Fig. 7-111). All tail gate adjustments may be completed without removal of the rear bumper face bar and body rear upper housing. The covered openings in the body rear lower housing on each side (Fig. 7-87) provide access for adjustment provisions confined within the tail gate storage area.

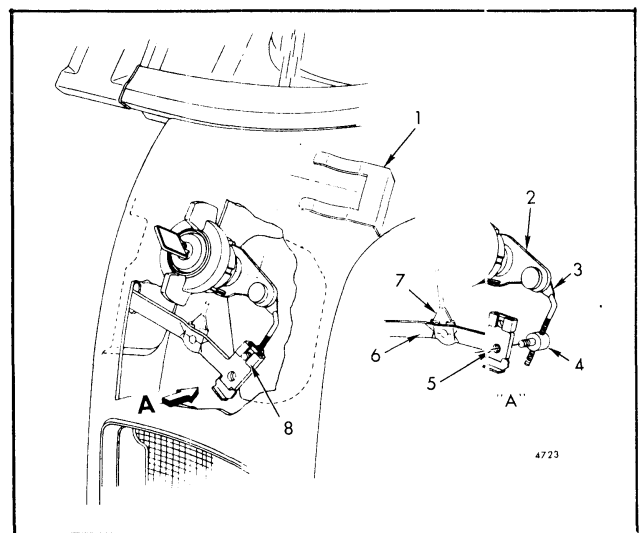


Fig. 7-110-Lock and Release Switch Assembly - Manual Gate

- |   |   |
|---|---|
| 1. Lock and Release Assembly Retaining Clip | 4. Swivel                               |
| 2. Switch Pawl                              | 5. Lock Lever Pilot Hole                |
| 3. Pawl-to-Lock Lever Rod                   | 6. Lock Lever                           |
|   | 7. Cable - Stop Cable and Clip Assembly |
|   | 8. Swivel - Installed Position          |



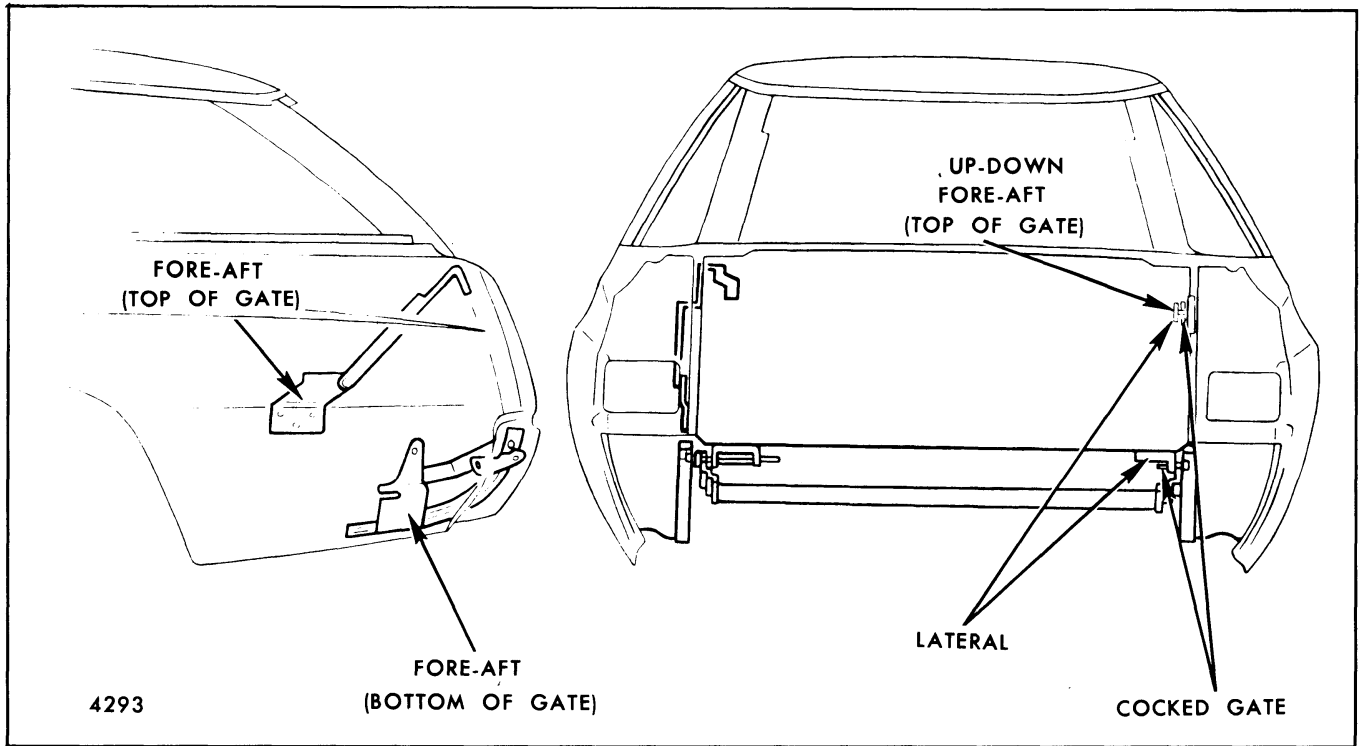


Fig. 7-111-Location of Tail Gate Adjustment Provisions

**WARNING:** WHEN PERFORMING TAIL GATE SERVICE OPERATIONS THROUGH THE ACCESS OPENINGS IN THE BODY REAR LOWER HOUSING (FIG. 7-87), PLACE BODY TAPE OVER THE TAIL GATE OPERATING KEY CYLINDER OR RELEASE KNOBS TO PREVENT INADVERTENT LOWERING OF THE TAIL GATE.

Up-down adjustment of the tail gate is controlled chiefly by the positioning of the tail gate striker assembly. To complete the up-down adjustment, proceed as follows:

1. With tail gate fully closed remove inner cover panel for access to striker attaching provisions (Fig. 7-107).
2. Hold striker pin hex end and loosen striker jamb nut. Loosen striker assembly attaching nut.
3. Position tail gate to desired height, move striker assembly to full engagement with lock bolt and tighten striker assembly.

To correct a cocked tail gate condition, close tail gate and loosen striker assembly. Through access hole in body rear lower housing, loosen the right hand roller support-to-roller shaft nut (Fig. 7-102). Position tail gate and tighten subject nut. Complete striker assembly adjustment.

Fore-aft adjustment of the tail gate is attained by positioning the tail gate guide channel assemblies for correcting the bottom of the tail gate and/or positioning the striker assembly and regulator lift arm and hinge assembly for correcting the top of the tail gate.

To correct bottom of tail gate fore-aft proceed as follows:

1. With tail gate fully closed remove rear body lower housing access cover on affected side (Fig. 7-87).
2. Loosen tail gate guide channel attaching screws.
3. Reposition tail gate fore-aft and tighten guide channel attaching screws.

To correct top of tail gate fore-aft, proceed as follows:

1. Right side.
  - A. Gain access to striker assembly and loosen striker pin jamb nut and striker assembly nut (Fig. 7-107).
  - B. Position tail gate fore-aft and tighten striker assembly.

2. Left side.

- A. Gain access to lift arm and hinge assembly and loosen assembly attaching bolts (Fig. 7-105).
- B. Position tail gate fore-aft and tighten lift arm and hinge assembly attaching bolts.

Lateral adjustment of the tail gate is allowed by the elongated attaching bolt holes in the lower right roller support (Fig. 7-101). A corresponding lateral adjustment of the striker assembly is required.

- 1. With tail gate fully closed remove right access cover from body rear lower housing (Fig. 7-87).
- 2. Loosen lower right roller support attaching screws (Fig. 7-102).
- 3. Adjust roller support to position tail gate laterally and tighten roller support attaching screws.
- 4. Adjust striker pin as required.

## WINDOW AND TAIL GATE CONTROL SYSTEM

### Description

The tail gate and window control switch mounted on the rear of the right quarter outer panel adjacent to the tail gate is a combination of lock cylinder and control switch. Two control switches are used; one for the manual tail gate which includes a link to the lock lever, and one for the power operated tail gate without link.

## TAIL GATE LOCK AND RELEASE SWITCH ASSEMBLY - (Manual Tail Gate)

### Description

The exterior control switch and release assembly for manual tail gate combines the lock cylinder and switch assembly into one integral unit and is held in place by a flat spring retaining clip (Fig. 7-110). The key cylinder operates the glass electrically through the opening cycle (first position clockwise) and closing cycle (first position counterclockwise). The winged knob rotates only in a clockwise direction for mechanical release of the tail gate, however, the window must be raised approximately 8 inches before the tail gate may be released with the knob. The key is not required for operation of the knob, provided the window is opened by the instrument panel control switch.

The control knob is connected to the lock lever by a pawl, connecting rod and swivel (Fig. 7-110). The swivel is adjustable on the connecting rod in order to provide correct switch-to-lock lever relationship.

### Removal and Installation

- 1. Remove spare tire cover and spare tire.
- 2. Remove tail gate window regulator as previously explained.
- 3. Disengage wire harness terminal block off control switch - manual or power.
- 4. On manual tail gate control switches, disengage control switch-to-lock lever link. Remove control switch retaining clip and withdraw switch and cylinder unit outward through piercing in quarter panel (Fig. 7-110).
- 5. On power tail gates pull control switch toward front of car to separate switch from cylinder and remove switch (Fig. 7-100). Do not disengage switch-to-cylinder retaining clip.
- 6. To install, reverse removal procedure.

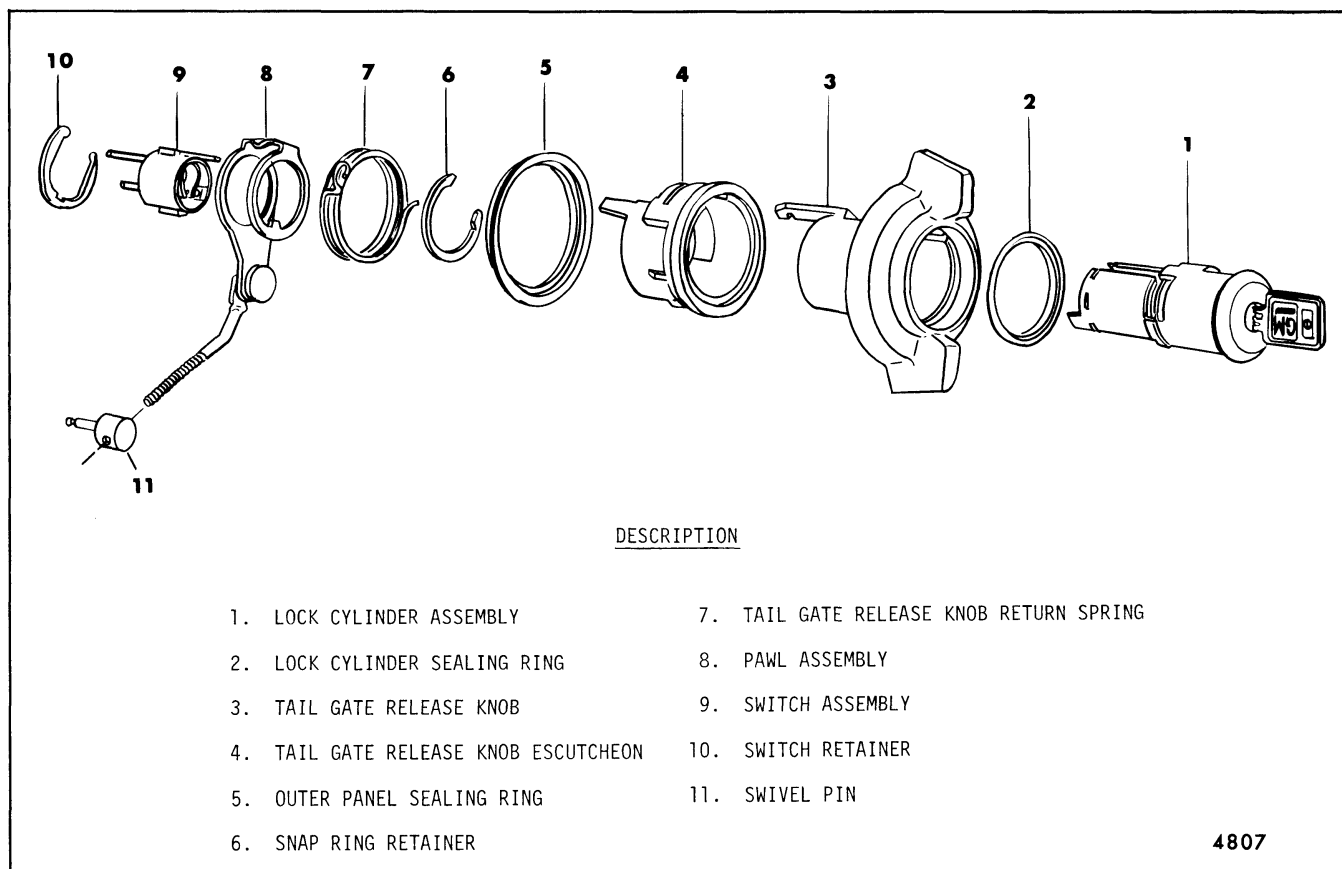
### Adjustment (Switch Pawl-to-Lock Lever Rod on Manual Gates Only)

- 1. With key cylinder in centered (vertical) position, withdraw key sufficiently to render cylinder inoperative (Fig. 7-110).
- 2. Assure that tail gate lock is in unlatched position (lock lever down).
- 3. Rotate switch pawl to full down position and hold in place.
- 4. Adjust swivel on pawl-to-lock lever rod to align with pilot hole on lock lever (Item "5", Fig. 7-110).
- 5. Rotate pawl upward and engage swivel in clip on lock lever (Item "8", Fig. 7-110).
- 6. Insert key and check operation of lock release.

**NOTE:** Check operation of window stop cable and clip assembly. (Refer to "Adjustment" - window stop cable and clip assembly).

### Disassembly

- 1. Remove control switch assembly as previously explained.



#### DESCRIPTION

- |                                      |   |
|--------------------------------------|---|
| 1. LOCK CYLINDER ASSEMBLY            | 7. TAIL GATE RELEASE KNOB RETURN SPRING |
| 2. LOCK CYLINDER SEALING RING        | 8. PAWL ASSEMBLY                        |
| 3. TAIL GATE RELEASE KNOB            | 9. SWITCH ASSEMBLY                      |
| 4. TAIL GATE RELEASE KNOB ESCUTCHEON | 10. SWITCH RETAINER                     |
| 5. OUTER PANEL SEALING RING          | 11. SWIVEL PIN                          |
| 6. SNAP RING RETAINER                |   |

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Fig. 7-112-Manual Tail Gate Lock and Release Switch Assembly

2. Remove switch retainer (Fig. 7-112).
  3. Remove switch from end of lock cylinder assembly.
  4. Disengage hook end of return spring from release knob tang.
  5. Turn key to "window open" position and place middle finger between key and release knob as shown in Figure 7-113.
- NOTE:** Perform this step prior to removing or installing return spring and pawl assembly.
6. Rotate return spring and pawl assembly until pawl assembly tang (trapped in narrow key cylinder slot) aligns with the large key cylinder assembly slot and remove.
  7. Remove snap ring retainer.
  8. Rotate release knob and release knob escutcheon until their tangs are approximately 1/4" apart and withdraw key cylinder assembly.

9. Rotate release knob within release knob escutcheon and remove.

10. To assemble, reverse above procedure.

### TAIL GATE WINDOW CONTROL SWITCH- (Power Tail Gate Only)

#### Description

The tail gate and window control switch for power operated tail gates is comprised of a key cylinder and a switch assembly held together by a wire-type clip (Fig. 7-108). The switch includes three positions, each to the right and left of center (vertical) position, of the key cylinder. The total of six switch positions allows opening or closing of window only, tail gate only or both window and tail gate simultaneously.

#### Removal and Installation

1. Remove control switch as previously explained.

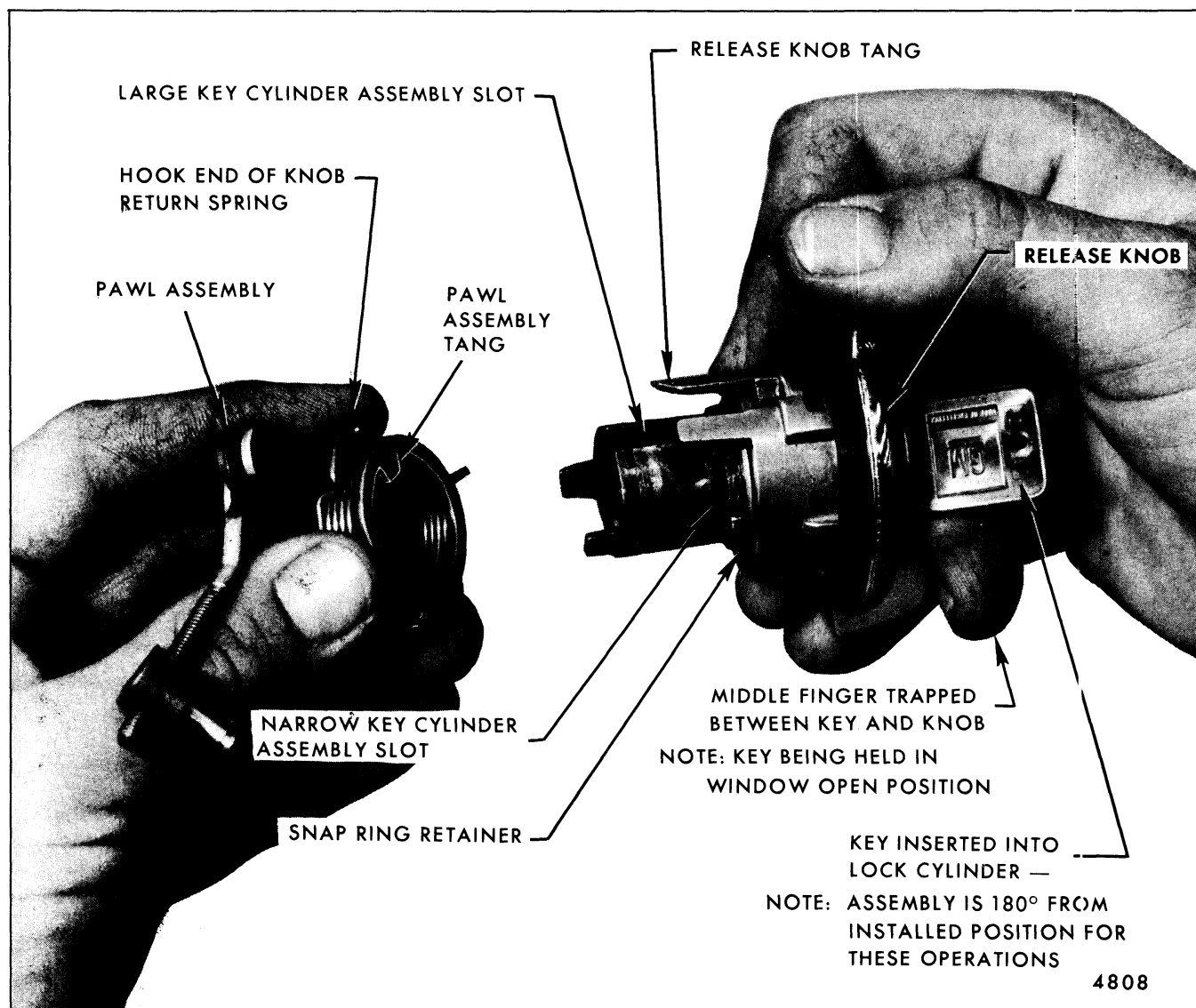


Fig. 7-113-Loading Pawl - Spring Assembly to Key Cylinder

2. Remove key cylinder retaining clip and remove cylinder (Fig. 7-108).
3. To install, reverse removal procedure.

## RETRACTABLE TAIL GATE LUBRICATION

### Description

All mechanical components that have relative motion with other parts are lubricated during assembly. If additional lubrication is required the specified materials or their equivalents as stated here should be used.

The following tail gate and window components should be lubricated when required with a thin coat of white lithium soap grease (Fiske Bros. Lo-Temp Lubriplate No. 777 or equivalent) as shown in Figure 7-114.

1. Tail gate lock fork bolt (View "A").
2. Torque roller shaft and synchronizing torque shaft-to-link shoulder bolt (View "B").
3. Torque rod and torque rod block-out (View "C").
4. Window guide cams and tail gate guide channels (Section D-D).

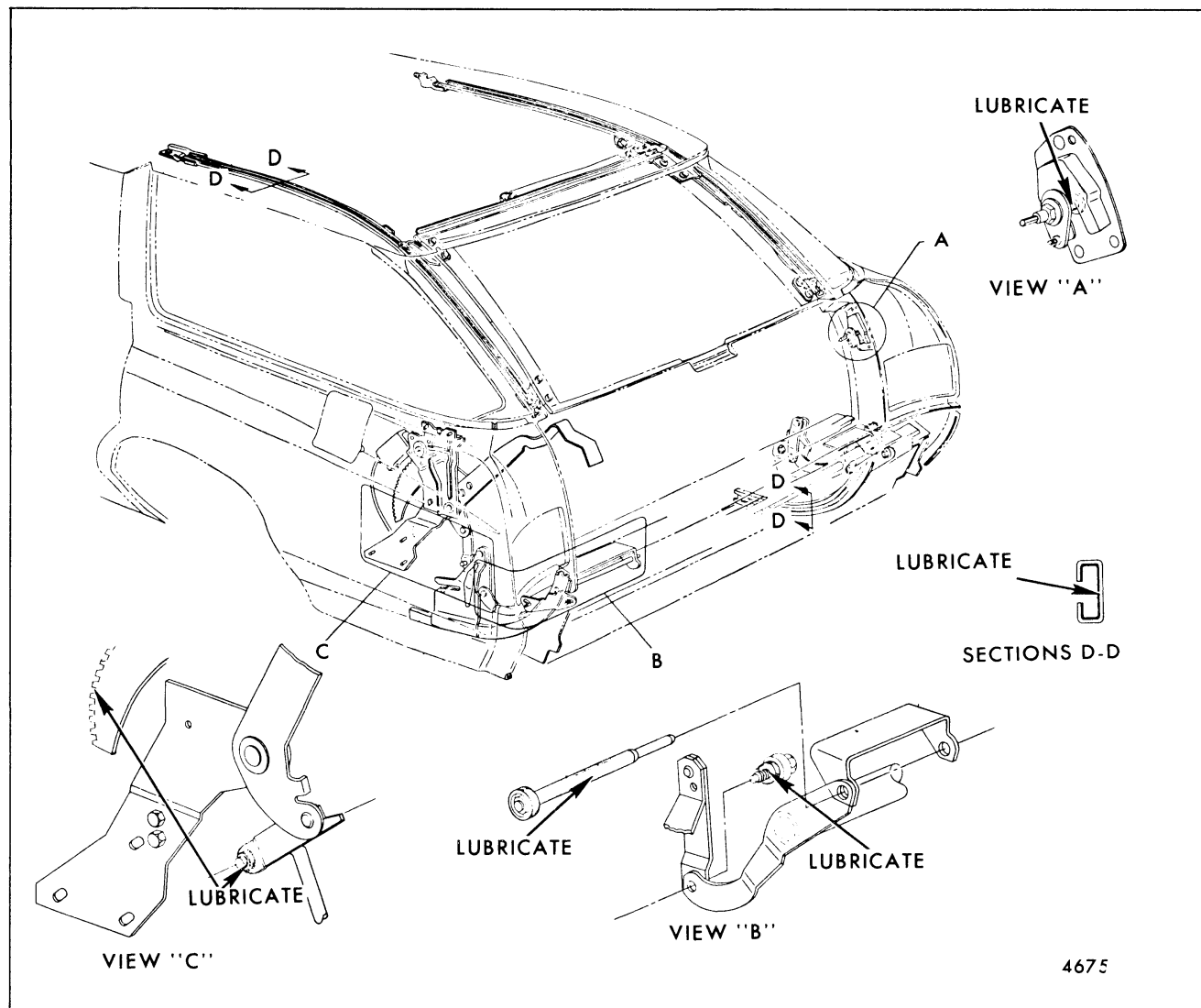


Fig. 7-114-Retractable Tail Gate Lubrication

# RETRACTABLE TAIL GATE CONTROL SYSTEM DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Exterior key switch cannot be rotated sufficiently counter-clockwise to lower window. (Manual tail gate)	1. Swivel on switch pawl-to-lock lever rod positioned too high.	(A) Adjust swivel downward.
2. Exterior key switch cannot be rotated sufficiently clockwise to raise window. (Manual tail gate)	1. Swivel on switch pawl-to-lock lever positioned too low.	(A) Adjust swivel upward.
3. Window cannot be raised or lowered with exterior key switch - cylinder rotational travel correct. (Manual tail gate)	1. Possible open window electrical circuit.	(A) Check window circuit (refer tail gate coverage in Electrical Section).
4. Tail gate or window inoperative from exterior switch. (Power tail gate)	1. Possible open tail gate or window electrical circuit.  2. Possible defective switch contacts or cam.	(A) Check tail gate or window circuit. Refer tail gate coverage in Electrical Section.  (A) Remove and inspect switch.

## SECTION 8

**ROOF**

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**HEADLINING-CLOTH AND VINYL COATED (SOFT)****HEADLINING - "A,B,C,E,F" STYLES****Description**

The headlining assembly is attached to the roof inner panel by concealed plastic retaining strips. The re-

taining strips are sewn to the headlining assembly and have rectangular lugs that fit into "T"-slots in

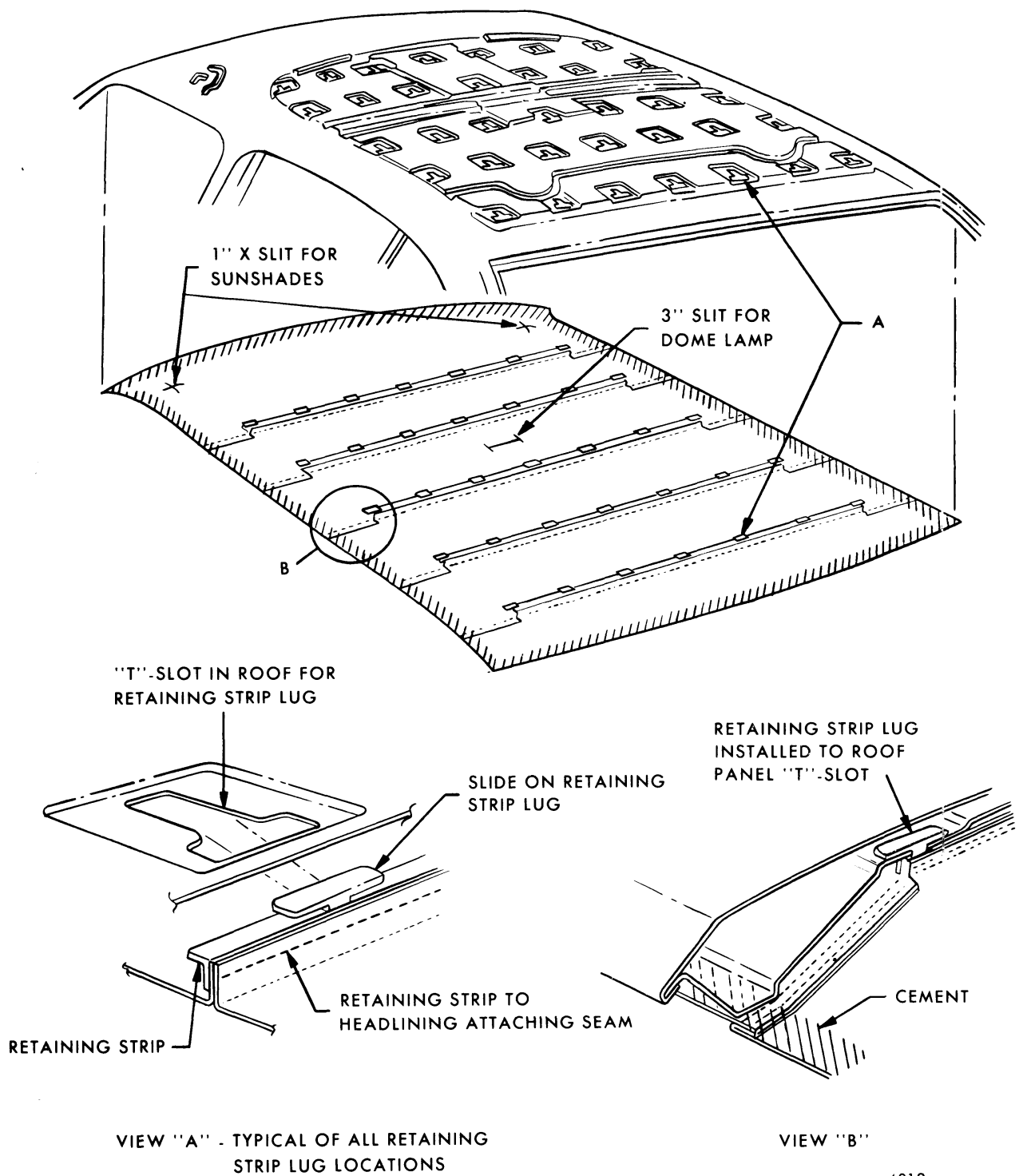


Fig. 8-1-Typical Cloth or Vinyl Headlining Installation - "A,B,C,E,F" Styles



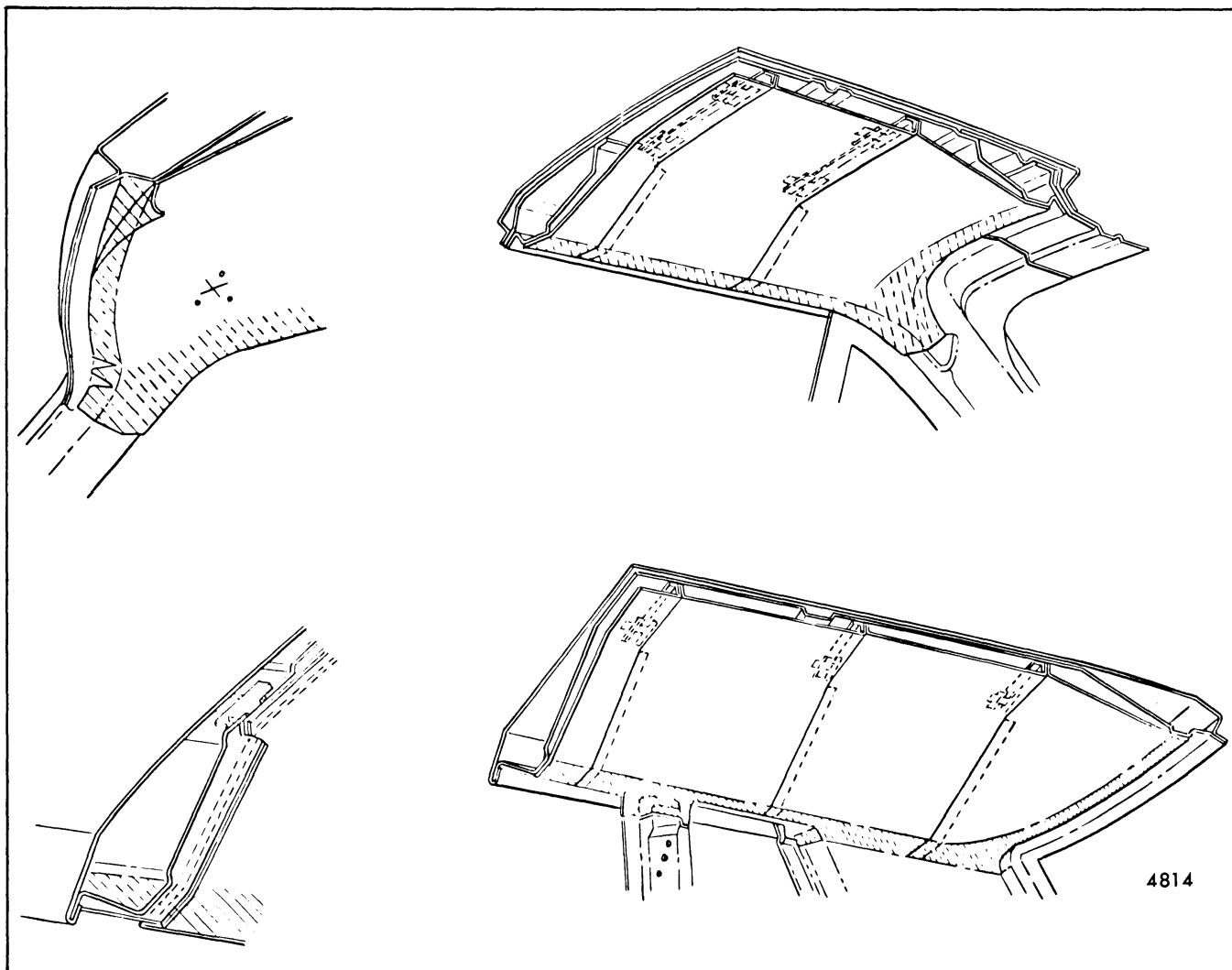


Fig. 8-2-Typical Trim Cement Application to Headlining

the roof inner panel (see Fig. 8-1).

The headlining is further retained along the side roof rails and roof extension areas by cement. Garnish moldings or finishing lace is also used to assist in retaining the headlining. Side roof rail garnish moldings are secured to a headlining retainer or the side roof rail by clips which are located in the molding.

When finishing lace is used at the windshield and back window or back body opening. The headlining is secured at these areas with an approved non-staining adhesive.

Removal of quarter upper trim is covered in the "Rear Quarter" section of this manual.

### Removal

1. Place protective cover over seat cushions and backs.
2. Prior to removing headlining, remove following hardware and trim assemblies if installed over headlining.
  - a. Windshield side and upper garnish moldings or finishing lace.
  - b. Rear view mirror support.
  - c. Sunshade supports.
  - d. Dome or rear quarter courtesy lamps.

- e. Coat hooks.
  - f. Side roof moldings or finishing lace.
  - g. Back window garnish moldings or finishing lace.
  - h. Center pillar upper trim assembly.
  - i. Rear quarter trim, where necessary.
  - j. Quarter upper trim finishing panel.
  - k. Skyvent moldings or finishing lace.
  - l. Shoulder strap stowage retainers and anchor plate.
3. Carefully detach cemented edge of headlining around entire perimeter and at skyvent or sunroof opening if present.
- NOTE:** Keep headlining clean by gathering or folding assembly with retaining strips to outside of material during removal.
4. Starting at front of body carefully detach retaining strips by pulling toward rear of body to disengage rectangular lugs from "T"-slots on each strip and remove headlining from body.

### Installation

1. Check headlining retaining strips for cracked or broken rectangular lugs. If damaged use service clip to replace.
2. If replacing headlining on styles with vista vent or sunroof option, the headlining and plastic retaining strips must be cut and trimmed using the following procedure.
  - a. Cut No. 1 and No. 2 retaining strips at Point A and B, see Figure 8-3, View "C". On "35" styles cut No. 1 retaining strip only, at same locations.

**CAUTION:** Exercise care not to damage headlining material when cutting retaining strip(s) and seams.

  - b. Carefully cut thread (top seam only) that attaches retaining strip to headlining between points A and B on No. 1 and No. 2 retaining strips and remove (see Fig. 8-3, View "C").
  - c. Cement seam to prevent stitching from coming loose at remaining retainer lugs (see Fig. 8-3, View "C").

3. Apply an approved non-staining trim cement to headlining surface at windshield, side roof rail and back window or back body opening (see Fig. 8-2).
  4. Lift headlining assembly into body. Starting at rear of body, engage outer lug of retaining strip to "T"-slot in roof inner panel and slide forward to secure. Working inboard insert remaining lugs of attaching strip.
  5. Working forward keeping tension pulled toward front of body, install and secure remaining retaining strips.
- NOTE:** Position headlining from side to side as required to keep headlining centered during installation.
6. Stretch and secure headlining at windshield first; then secure at back window or back body opening, rear quarter areas and side roof rail.
  7. On styles with vista vent option cut out area of headlining at roof opening leaving sufficient material to fold over entire edge of opening. Apply cement and secure around sunroof or vista vent opening (see Fig. 8-3, View "B").
  8. Permanently attach material removing all draws and wrinkles. Replace all previously removed inside hardware, moldings and trim assemblies.

## HEADLININGS - "D" STYLES

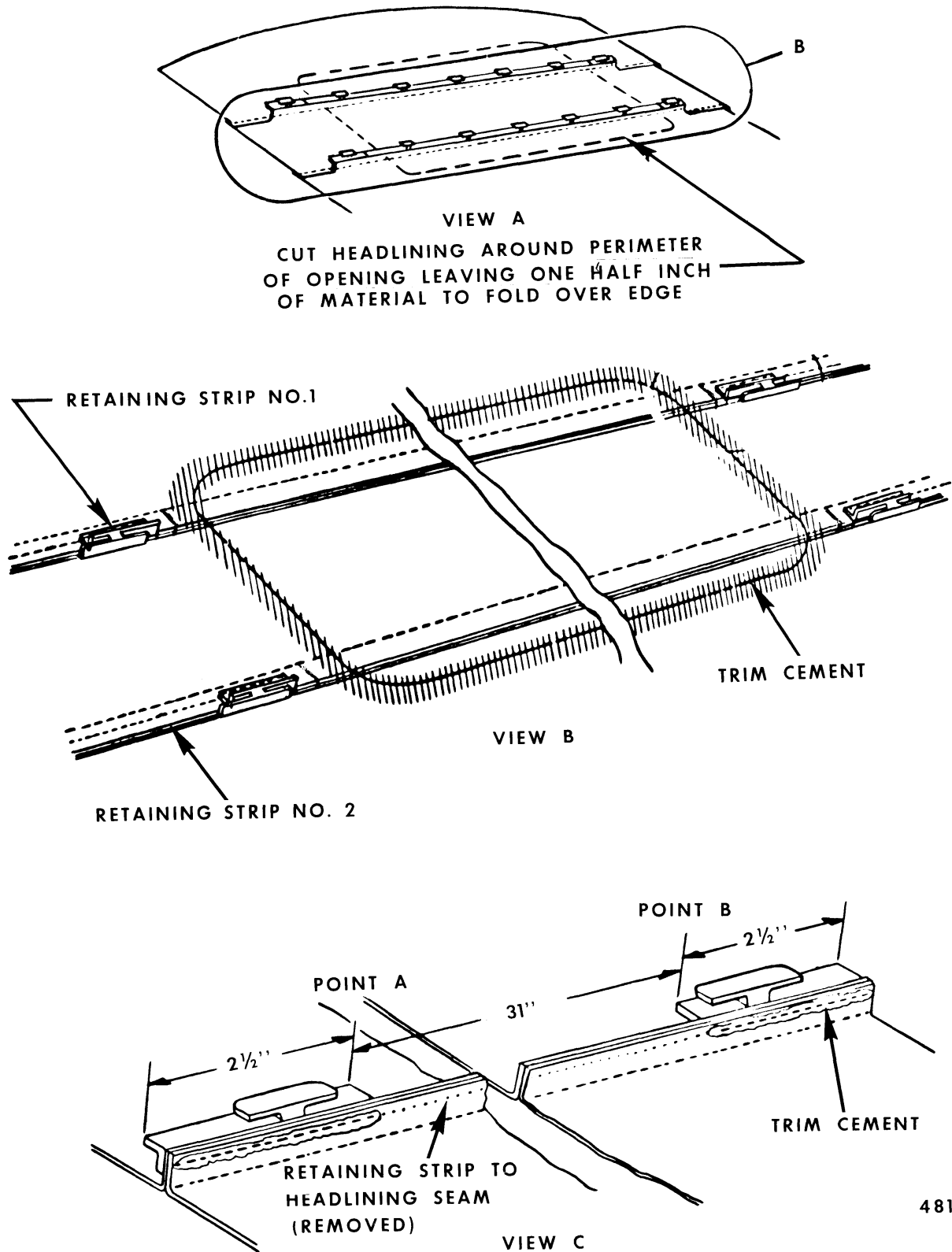
### Description

The headlining assembly is contoured to the inner surface of the roof panel by listing wires. The listing wires are attached to the headlining by concealed listing wire pockets which are part of the headlining. The ends of the listing wires are secured in holes at the side roof rail or by use of clips which are attached to the side rail with screws.

When finishing lace is used at the windshield and back window opening, the headlining is attached at those areas with nonstaining adhesive.

Where garnish moldings are utilized the headlining is tacked or stapled in addition to being cemented at the windshield and back window openings.

The headlining is retained along the side roof rails by cement or the use of a pronged retainer. Garnish moldings are also used to assist in retaining the headlining. The side roof rail garnish moldings are secured by clips which are located in the moldings.



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Fig. 8-3-Headlining Installation - Styles with Vista Vent or Sunroof Installed

At the roof extension area, the headlining is secured either by cement to a metal retainer or by tacks or staples to a trim stick (see Fig. 8-5, View "E").

Quarter upper trim is covered in the "Rear Quarter" section of this manual.

### Removal

1. Place protective coverings over seat cushions and backs.
2. Prior to removing headlining, remove following hardware and trim assemblies if installed over headlining.
  - a. Windshield side and upper garnish moldings or finishing lace.
  - b. Rear view mirror support.
  - c. Sun shade supports.
  - d. Dome or rear quarter courtesy lamps.
  - e. Coat hooks.
  - f. Side roof rail moldings.
  - g. Back window garnish moldings or finishing lace.
  - h. Center pillar upper trim assembly.
  - i. Rear quarter trim, where necessary.
  - j. Quarter upper trim finishing panel.
  - k. Back body opening garnish moldings.
  - l. Shoulder strap anchor plate and escutcheon.
3. Carefully remove tacks or staples securing headlining at windshield and back window opening if present.
4. Use headlining inserting tool J-2272 (or equivalent) or similar wide-bladed tool and carefully disengage headlining from pronged retainers where present (see Fig. 8-4, View "B").
5. Carefully detach cemented edge of headlining around entire perimeter. Exercise care to keep headlining material clean by gathering or folding headlining with listing wires on outside.

6. Starting at front of body, carefully disengage No. 1 and No. 2 listing wires from side roof inner rails and from plastic supporting clips on roof bows (see Fig. 8-4, View "A"). In like manner, working from rear of body, disengage listing wires from side roof rails and tabs above back window.

7. Disengage No. 3 listing wire from plastic clips on structural bow and remove headlining assembly from body.

**NOTE:** Note in which holes listing wires are installed in side roof rails. Listing wires should be placed in same hole when replacing headlining.

8. If replacing headlining, remove listing wires from pockets of old headlining.

**NOTE:** Listing wires removed from old headlining must be installed in corresponding pockets of new headlining.

### Installation

1. If previously removed, install listing wires into corresponding pockets of new headlining assembly. Check that plastic clips are installed in roof bow slots.
2. Apply an approved non-staining trim cement to headlining surface at windshield, side roof rail and back window opening.
3. Lift headlining assembly into body and install No. 3 listing wire into retainers on structural roof bow.
4. Working rearward from No. 3 listing wire, install listing wires in side roof rails and snap listing wires into plastic retainers on roof bows. Hook rear listing wire over tabs at back window and bend upward to secure. Working forward, install remaining listing wires (see Fig. 8-4, View "A").

**NOTE:** Listing wires may be adjusted up or down by utilizing appropriate holes in side roof rails. Listing wires should rest tight against roof panel after installation (see Fig. 8-4, View "B").

5. Stretch and secure headlining at windshield first; then, back window opening. Stretch and secure headlining at rear quarters and side roof rails. Permanently attach material removing draws and wrinkles and replace all previously removed inside hardware and trim assemblies.

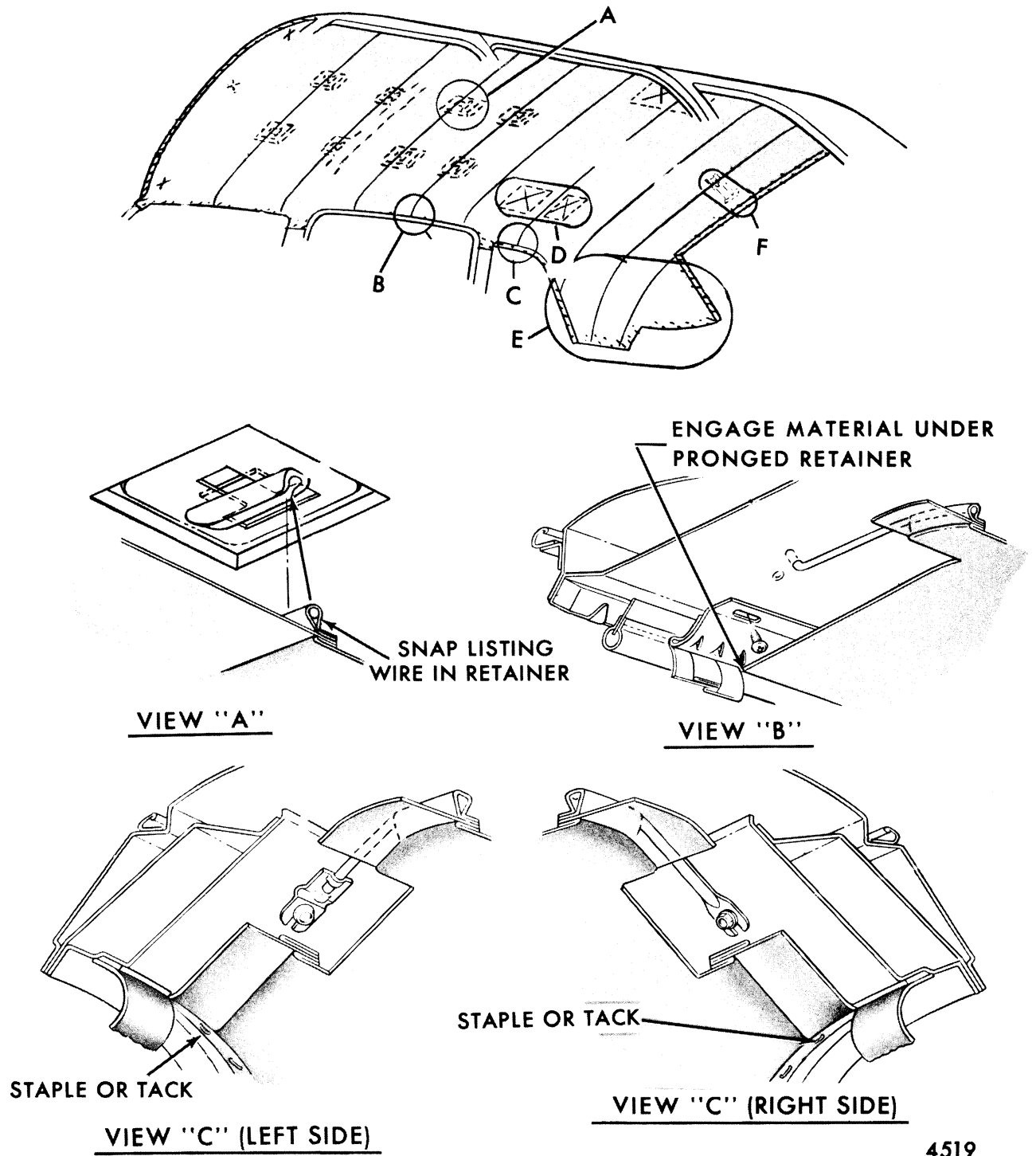


Fig. 8-4-Headlining Installation - "D" Body Styles

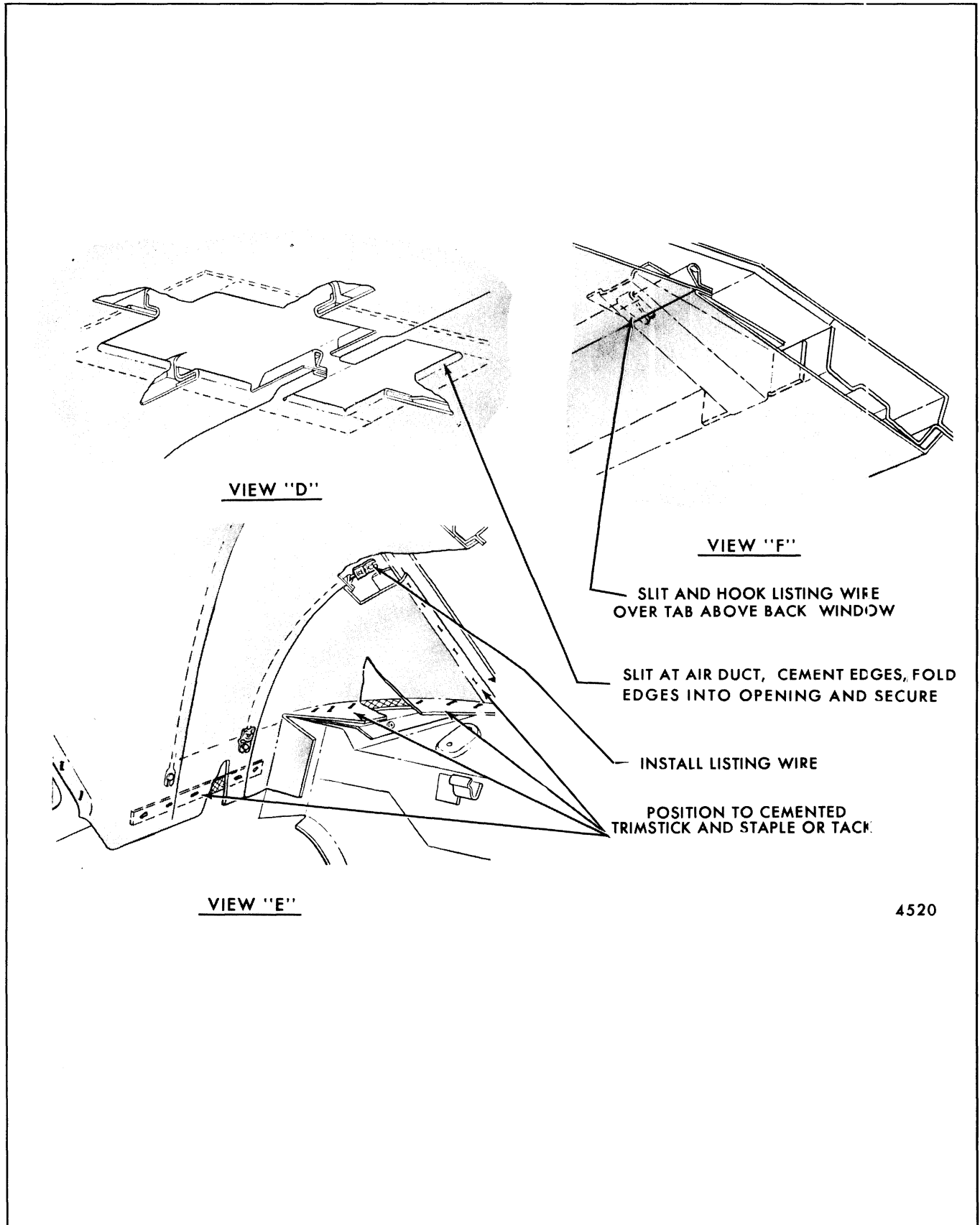


Fig. 8-5-Headlining Installation - "D" Body Styles

# ONE-PIECE FORMED HEADLINING

## DESCRIPTION

The one piece formed headlining consists of molded hardboard covered with a foam and vinyl facing. The headlining is held temporarily in place by retaining tabs located in the side roof rail which engage recessed slots in both sides of the headlining assembly. Final attachment is accomplished when the interior moldings and attaching screws that retain the sunshade brackets, dome lamp base, coat hooks and shoulder strap anchor plates are installed (see Fig. 8-6).

The one piece construction requires the headliner be serviced as a complete assembly in all cases.

## Removal

1. Remove the following items:
  - a. Courtesy lamps.
  - b. Rear view mirror support.
  - c. Coat hooks.
  - d. Upper quarter trim finishing panels.
  - e. Side roof rail moldings.
  - f. Windshield and back window garnish moldings.
  - g. Shoulder strap anchor plate and escutcheon.
  - h. Windshield side garnish molding.
  - i. Sunshade support brackets.

2. Disengage headlining assembly from tab retainers and carefully lower headlining from roof panel (see Fig. 8-6, View "A").
3. Lower all windows on both sides of car to the full down position and remove headlining through window openings. On "17" styles remove headlining through back body opening.

## Installation

1. Load rear portion of headlining diagonally into car through side window opening(s).

**CAUTION:** Care must be exercised when loading assembly. Over flexing may result in damage.

2. Align headlining to roof inner panel with recessed slots positioned over retainers at side roof rail (see Fig. 8-6, View "A").
3. Engage headlining at tab locations to accomplish temporary retention to roof inner panel (see Fig. 8-6, View "A").
4. Align headlining with cut-outs for sunshade brackets and dome lamp at attaching locations.
5. Install sunshade brackets and dome lamp base.

**NOTE:** Do not tighten sunshade bracket and dome lamp attaching screws completely until headlining is properly aligned at all other hardware attaching locations.

6. Install all other previously removed hardware and interior moldings.

# DOMELAMPS

## DESCRIPTION

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. The dome lamp harness extends up the left windshield pillar, inboard of the sunshade support and across the roof inner panel to the dome lamp. Clips in the harness attach to retaining slots in the roof inner panel. Circuit diagrams are illustrated in the Electrical Section of this manual. Dome lamp removal is shown in Figure 8-7.

## Removal and Installation

1. Insert a flat-bladed screwdriver or similar tool between dome lamp lens and lamp base. Press inward and down to disengage lens retaining tabs from base.
2. Remove bulb from terminal clips.
3. Remove two (2) lamp base attaching screws.

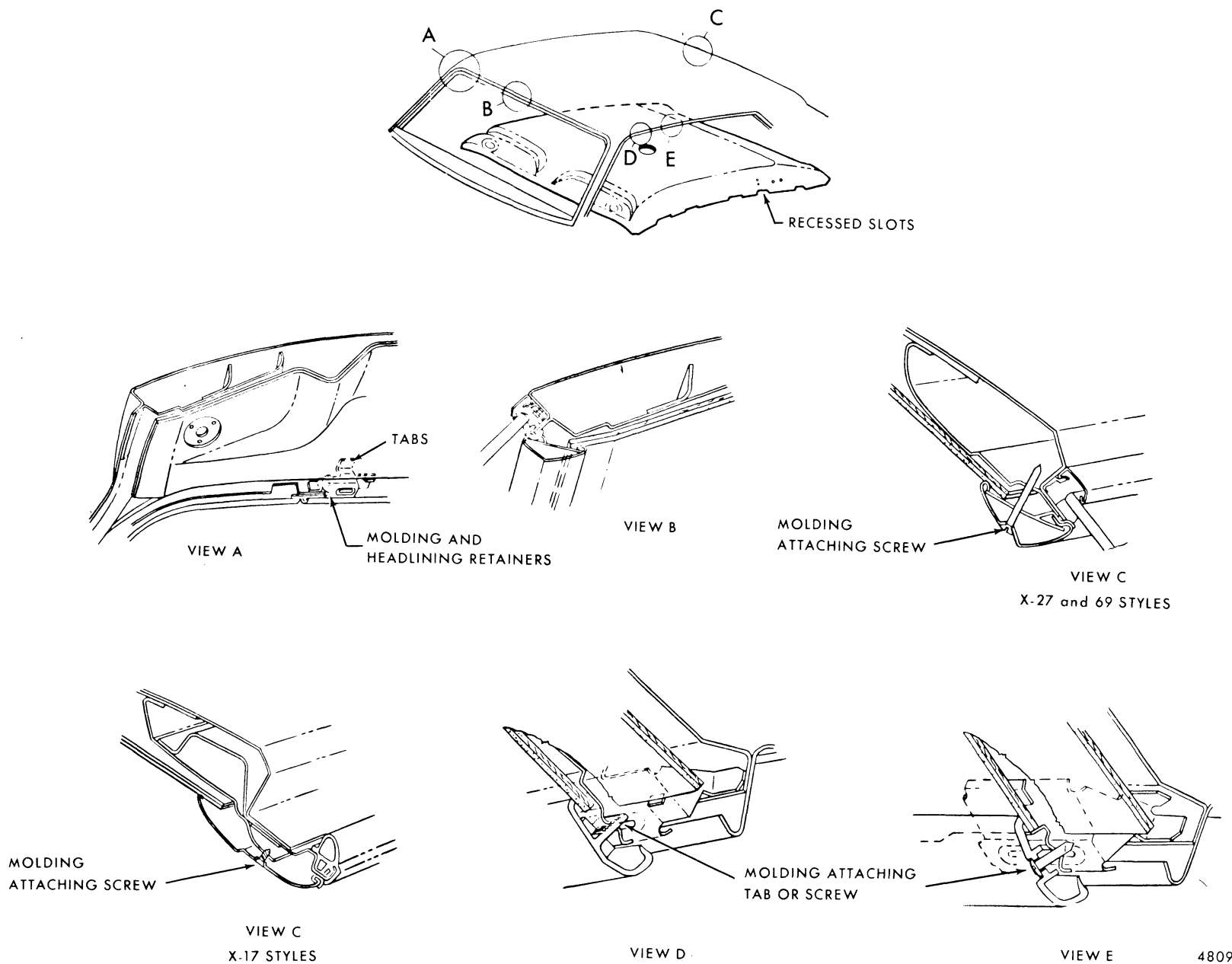


Fig. 8-6-One Piece Headlining



4. To disengage wire harness from lamp base, grasp terminal clip with pliers and push clips through back of base.
5. To install dome lamp assembly, reverse removal procedure.

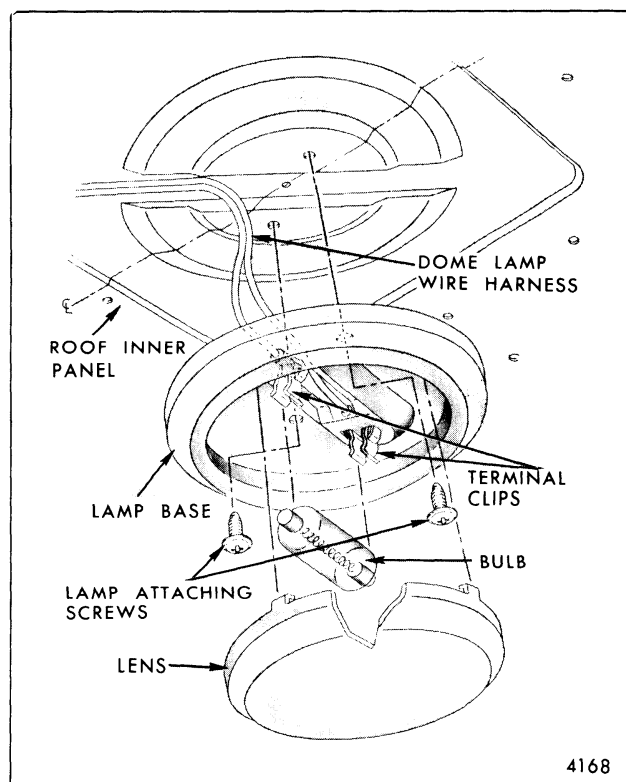


Fig. 8-7-Dome Lamp

## LUGGAGE CARRIER ("A" AND "B" STATION WAGONS)

### DESCRIPTION

The luggage carrier is available as a factory or dealer installed option for "A" and "B" style station wagons. On factory option, skid strips and support mounting nuts are installed at the factory. During pre-delivery operations the dealer will complete installation as follows:

**NOTE:** On "A" styles there are eight (8) screws securing supports and top rails to roof panel. On "B" styles there are ten (10) screws securing supports and top rails to roof panel.

1. Assemble supports and top rails with 3/8 inch long screws (Fig. 8-8).
2. Remove screws and washers from rubber support mounting nuts on roof (View "A", Fig. 8-8). Leave rubber nuts in place. Keep screws, discard washers.
3. Place four gaskets over rubber well nuts (gaskets are not required if vehicle is equipped with vinyl roof cover option).
4. Position luggage carrier on roof and install screws through supports into rubber nuts. Use light pressure on screws until threads engage in the nut to avoid pushing nut through roof panel (Fig. 8-8).
5. Tighten all screws securely.

## VISTA VENT

### DESCRIPTION

The roof mounted vista vent is available as an option on Oldsmobile "A-37" and "57" styles and is standard on the "A-35" styles. The assembly consists of a vent glass, two hinges and one latch mechanism. The

rear edge of the glass raises approximately 1-3/4" above the roof panel in the full-open position (Fig. 8-10). The glass is of compound curvature to match flush with roof panel contour when fully closed and is fabricated of two pieces of tempered glass separated by a tinted plastic interlayer. The vent hinges

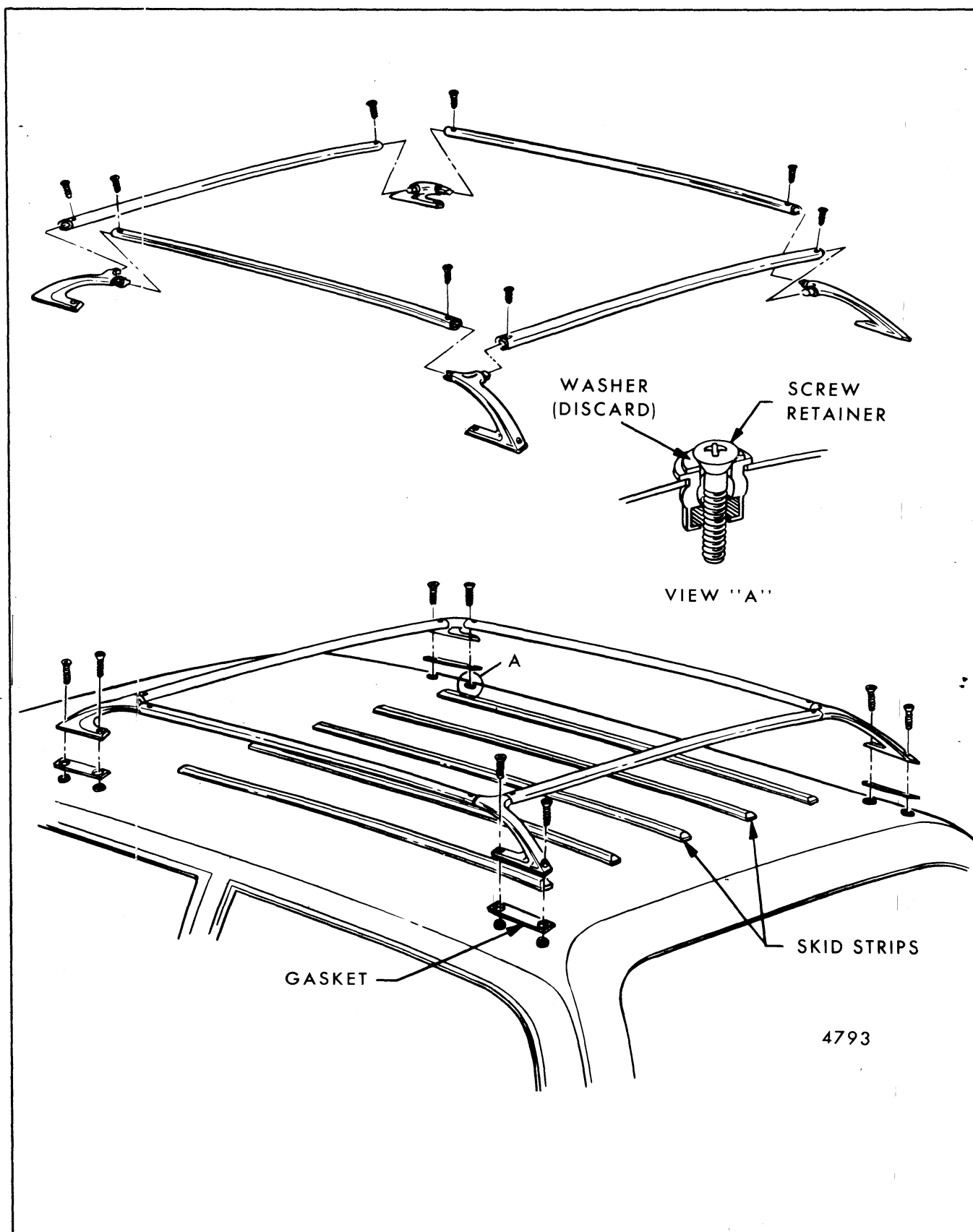


Fig. 8-8-"A" Body Luggage Carrier Installation - Factory Installed Option

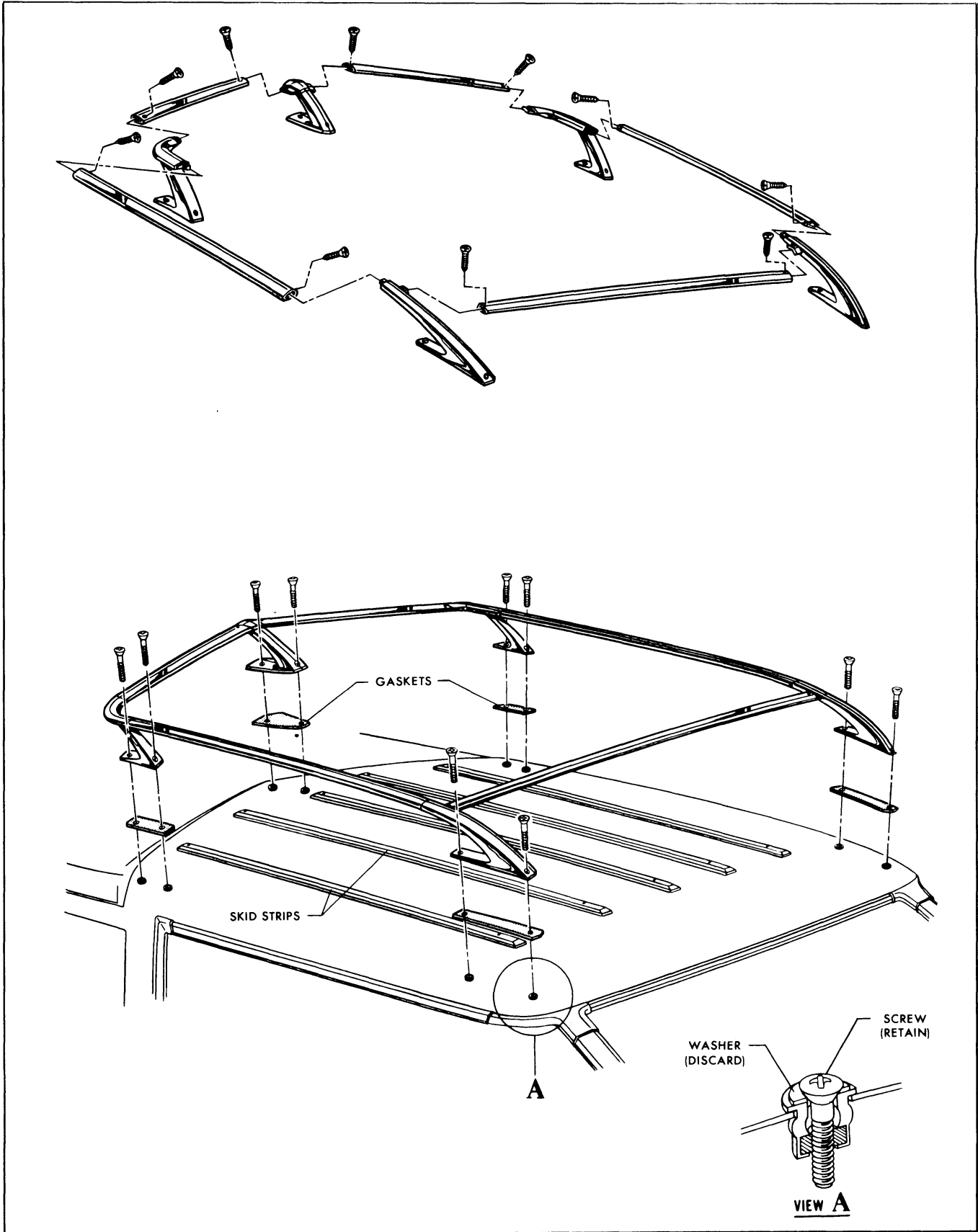


Fig. 8-9-"B" Body Luggage Carrier Installation - Factory Installation Option

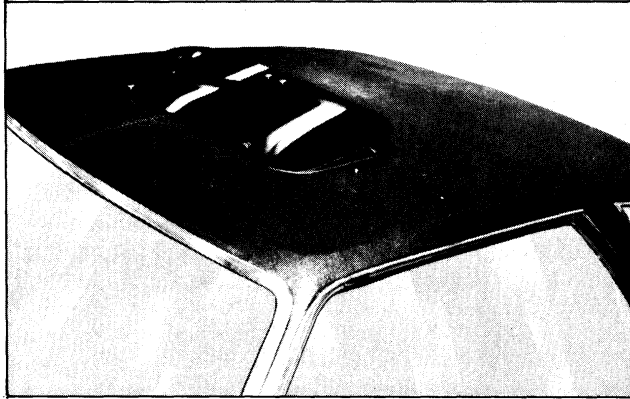


Fig. 8-10-Vista Vent Exterior View - (Open)

are fabricated of spring steel and allow opening and closing cycles by flexing. The vent latch assembly operates on the over-center principle and doubles as a hold-open device. Both the hinges and latch assembly are bolted directly to the vent glass through protective bushings. The vent glass closes against a one-piece weatherstrip which is cemented and sealed within the gutter of the roof opening.

## VENT GLASS ASSEMBLY

### Adjustments

The vent glass assembly is adjustable fore-aft and cross-body within the roof opening. These adjustments are allowed by the over-size elongated holes in the hinges and latch base plate at their respective points of attachment to the roof inner panel. Up-down adjustment of the glass for flush fit with roof contour is achieved with addition or removal of shims at the hinge and/or latch area.

To align the vent glass fore-aft or cross-body, proceed as follows:

1. Open vista vent fully and remove latch escutcheon assembly. Detach roof opening trim lace along front edge of opening (Fig. 8-11).
2. Detach headlining from inner panel reinforcement at glass hinge areas sufficiently to provide access to hinge-to-body attaching bolts (Fig. 8-12).
3. Loosen hinge-to-body and latch-to-body attachments, align glass and tighten attachments (Fig. 8-12).
4. Replace previously removed trim parts.

To raise or lower leading edge of vent glass for flush fit with roof panel, proceed as follows:

1. Open vista vent fully and detach roof opening trim lace along front of opening (Fig. 8-11).
2. Detach headlining at glass attaching screw access slot(s) in roof inner panel reinforcement (Fig. 8-12).
3. Remove hinge-to-glass attaching screw(s) and add spacer (Part No. 9660355 or equivalent) to raise glass or remove existing spacer to lower glass at either or both hinges. Replace hinge to glass attaching screw(s) and torque to 26-38 inch pounds (Section A-A, Fig. 8-12).
4. Attach headlining and trim lace.

To raise or lower trailing edge of vent glass, proceed as follows:

1. Open vista vent fully and remove latch escutcheon assembly (Fig. 8-11).
2. Detach headlining sufficiently to remove latch plate-to-body attaching nuts. Disengage latch plate from studs by pivoting plate down and forward (Fig. 8-12).
3. Add spacer (Part No. 9660357 or equivalent) to lower glass or remove existing spacer to raise glass (View "C", Fig. 8-12).
4. Drive latch plate attaching nuts, reposition headlining and replace latch escutcheon assembly.

### Removal

1. Open vista vent fully and detach roof opening trim lace along front of opening (Fig. 8-11).
2. Detach headlining at glass attaching screw access slots in roof inner panel reinforcement (Fig. 8-12).
3. Remove hinge-to-glass attaching screws (right and left) and observe number of spacers used between hinge and bushing (Section A-A, Fig. 8-12).
4. Remove "E" ring retainer from end of latch assembly hinge pin and remove pin (Fig. 8-12). Remove vent glass from body with upper portion of latch assembly attached to glass.

### Installation

1. If new vent glass is being installed, transfer upper portion of latch assembly and all special nuts

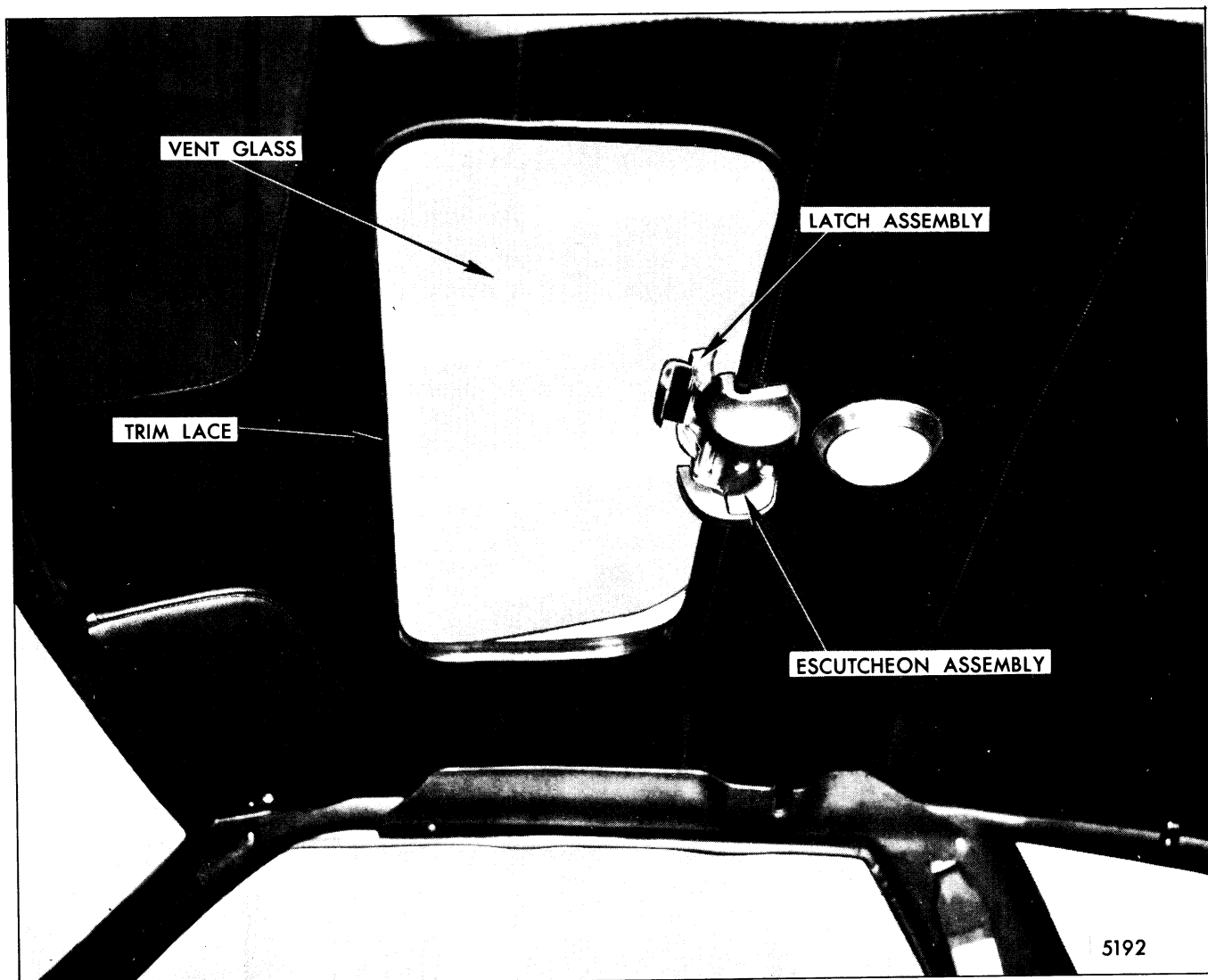


Fig. 8-11-Vista Vent Interior View - (Open)

and bushings (upper and lower) from original glass to new glass as a bench operation. Torque latch-to-glass attaching screws to 26-38 inch pounds (Section B-B, Fig. 8-12).

2. Load glass into opening, join upper and lower halves of latch assembly and insert hinge pin and secure with "E" ring retainer (Fig. 8-12).
3. Assuring that hinge-to-glass special nuts, upper and lower bushings are in place, load screw and spacer(s) at each hinge and drive screws to 26-38 inch pounds torque. Cycle vent glass to check proper alignment (Section A-A, Fig. 8-12).
4. Replace detached headlining and trim lace.

## VENT GLASS HINGE(S)

### Removal and Installation

1. With vista vent open, detach roof opening trim lace along front edge of opening (Fig. 8-11).
2. Detach headlining from roof inner panel reinforcement at glass hinge area(s) sufficiently to provide access to hinge-to-body attaching bolts and remove bolts (Fig. 8-12).
3. Remove hinge-to-glass attaching screw(s) and observe number of spacers used between hinge and bushing (Section A-A, Fig. 8-12).

4. Withdraw hinge through roof inner panel reinforcement slot to remove.
5. To install hinge, reverse removal procedure. Torque hinge-to- glass attaching screw to 26-38 inch pounds.

## VENT GLASS LATCH ASSEMBLY

### Removal and Installation

1. Open vista vent fully and remove latch escutcheon assembly (Fig. 8-11).
2. Detach headlining sufficiently to remove latch plate-to-body attaching nuts. Disengage latch plate from studs by pivoting plate down and forward (Fig. 8-12).
3. With latch assembly pivoted forward, remove latch-to-glass attaching screws and remove latch assembly (Section B-B, Fig. 8-12).
4. To install latch, reverse removal procedure, torque latch-to- glass attaching screws to 26-38 inch pounds.

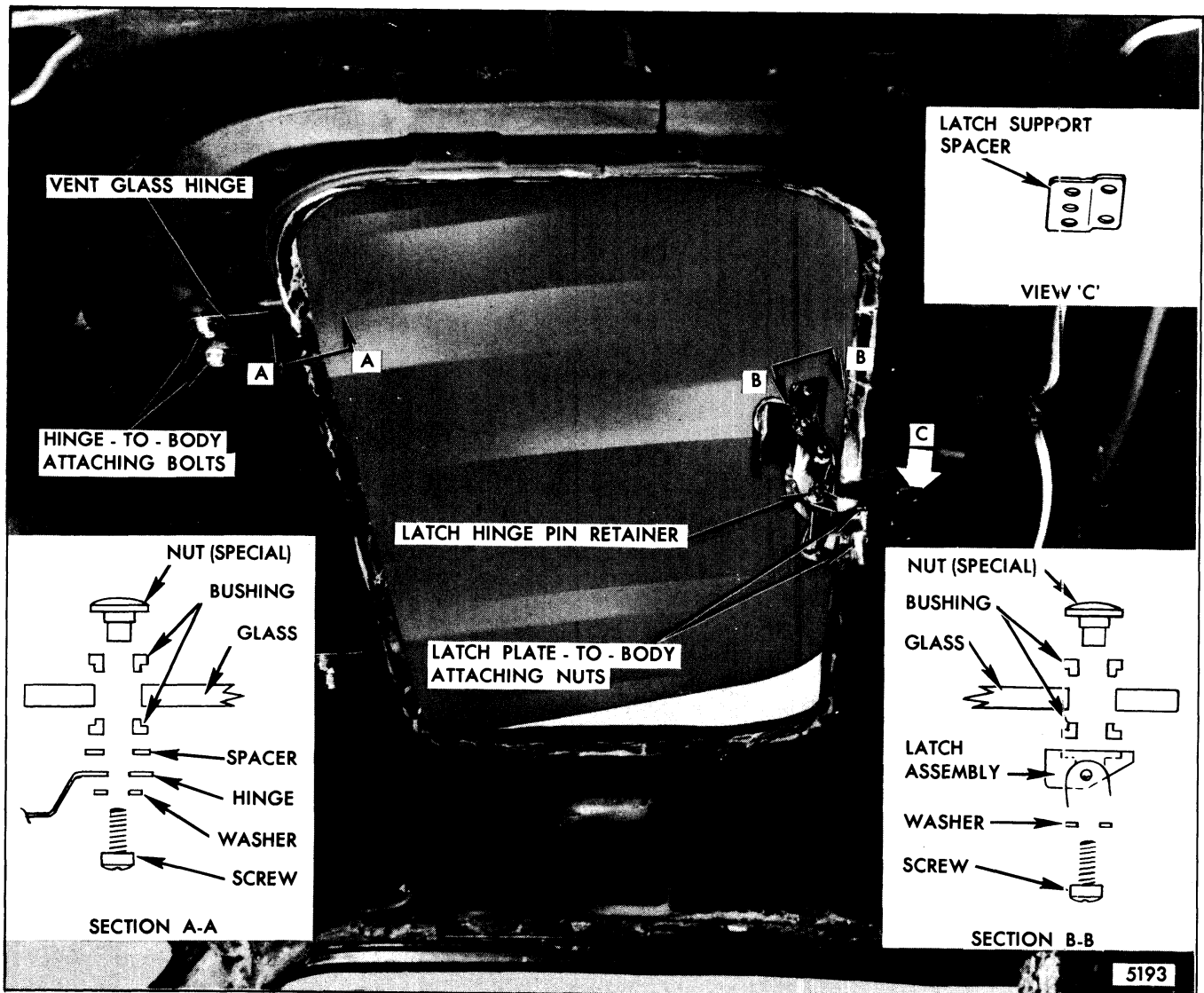


Fig. 8-12-Vista Vent Hardware (Headlining Removed for Illustrative Purpose Only)

## VENT GLASS WEATHERSTRIP

The vent glass weatherstrip is formed in a continuous loop and is retained within the roof opening gutter by weatherstrip adhesive.

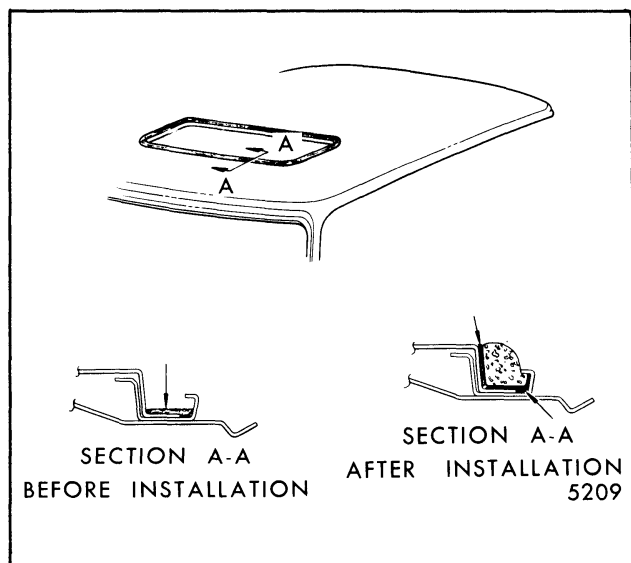


Fig. 8-13-Vista Vent Weatherstrip Installation

### Removal

1. Remove the vent glass assembly as previously explained.

2. Break adhesive bond between weatherstrip and gutter around perimeter of opening and remove weatherstrip.

**NOTE:** Careful application of heat (as with a heat gun) applied to weatherstrip gutter speeds weatherstrip removal.

### Installation

1. Remove most of original adhesive remaining in the weatherstrip gutter with an adhesive solvent.
2. Apply a coat of black adhesive to weatherstrip gutter. Be sure lap joints in gutter are sealed with adhesive (Fig. 8-13).
3. Apply a coat of adhesive to bonding surface of weatherstrip. When cement becomes tacky, insert weatherstrip into gutter for final bond.
4. Using a nozzle type application, apply a bead of black weatherstrip adhesive between outboard periphery of weatherstrip and body opening (Fig. 8-13).

## FABRIC ROOF COVER

### DESCRIPTION

The roof panel cover is a vinyl coated fabric or an integral padded vinyl, dielectrically bonded or stitched together to form an assembly. The cover assembly is applied to the roof panel with a non-staining vinyl trim adhesive.

The type of molding treatment determines whether the cover extends into the drip molding, windshield opening, or back window opening.

On styles where the cover extends into the windshield and back window opening, the cover is retained in the opening by cement, clips installed over weld-on studs and drive nails. When the cover extends into the drip molding or folds around the roof panel flange, it is retained by drip scalp moldings, weatherstrip retainers or finishing moldings.

On styles equipped with roof panel moldings, the cover is retained under the moldings by cement and clips installed over weld-on studs. On styles utilizing a pad, a metal retaining strip is installed onto weld-on studs and held in place with slide-on retaining washers.

### Removal

1. The following parts must be removed prior to removing the fabric roof cover.
  - a. Upper and both side windshield and back window reveal moldings (except on styles where the cover does not extend into the windshield opening or back window opening).
  - b. Roof drip molding scalps, weatherstrip retainers or finishing moldings (when cover extends into drip molding or folds around the roof panel flange).
  - c. Rear quarter belt reveal moldings and rear end belt reveal moldings.
  - d. Roof cover retainer to rear body lock pillar (on styles so equipped).
  - e. Roof extension panel emblem or name plate assembly (if present).

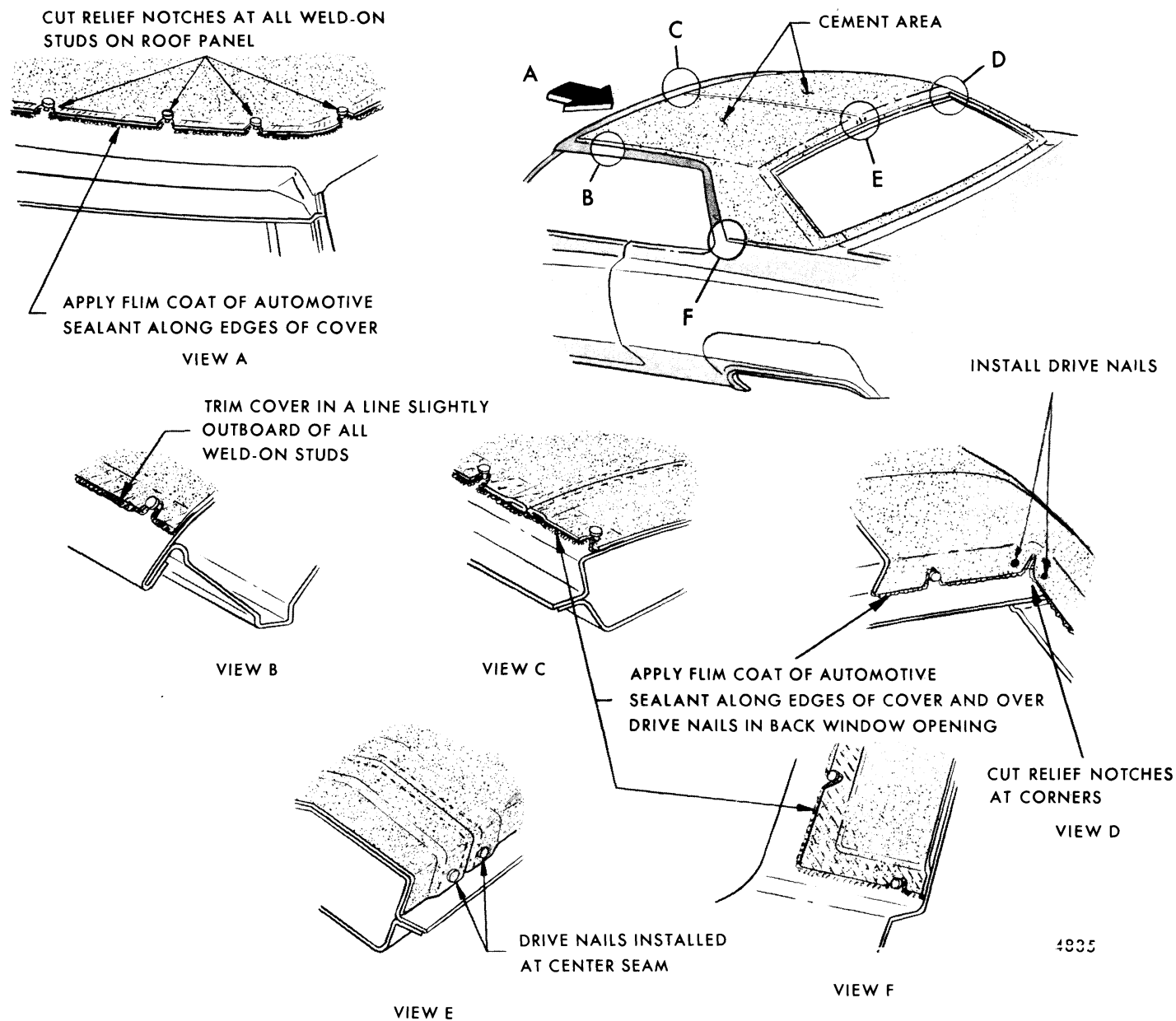
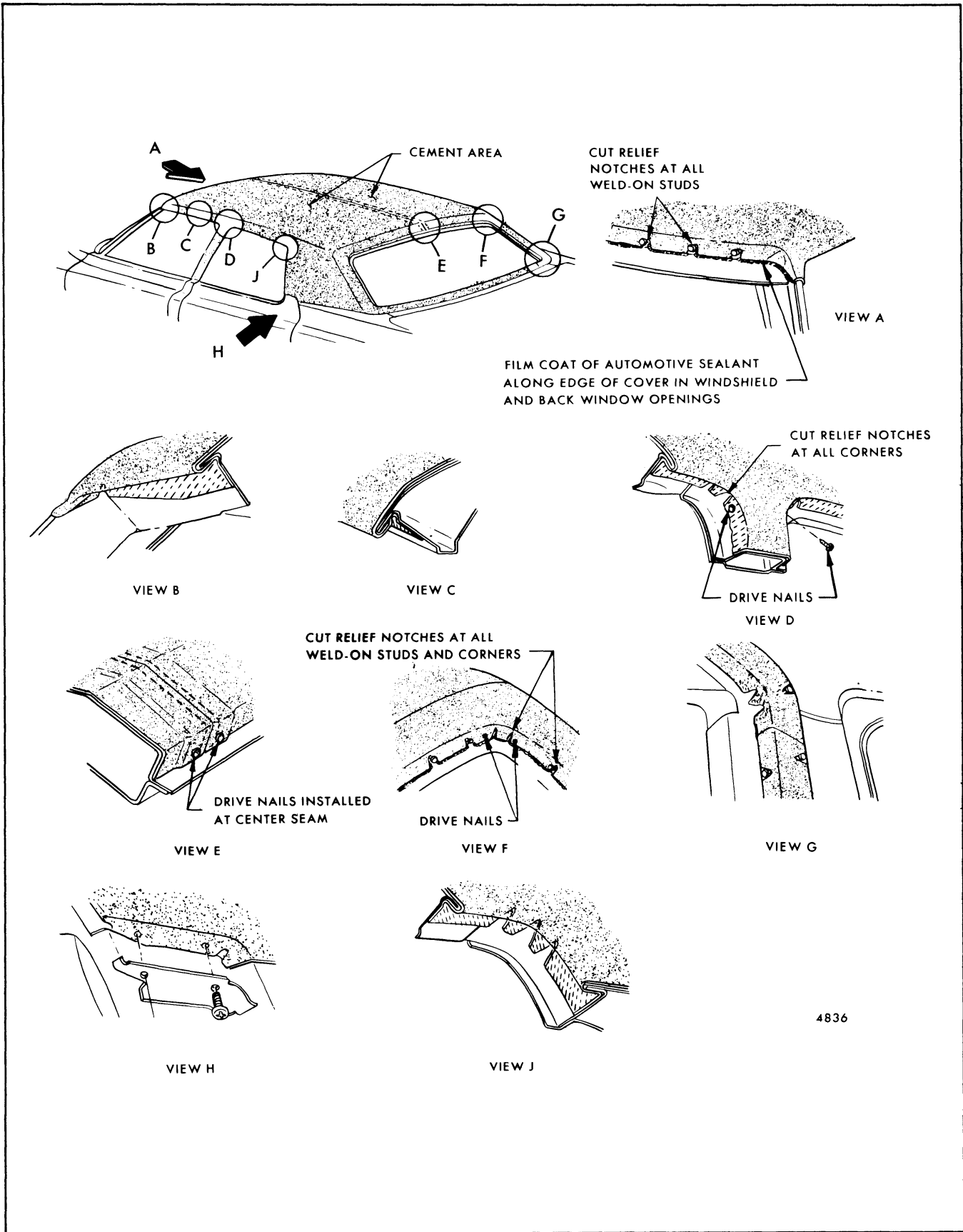


Fig. 8-14-Typical Fabric Roof Cover Installation With Roof Panel Moldings





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Fig. 8-15-Typical Fabric Roof Cover Installation Without Roof Panel Moldings - "B and C" Styles

- f. All roof panel moldings and molding retainers (on styles so equipped).
  - g. Quarter window lower belt reveal molding (on styles where fabric cover extends under molding).
  - h. On "B" body station wagon styles, remove back body opening and quarter window reveal moldings.
  - i. Quarter window reveal moldings on "A-37-57" styles.
  - j. Stationary quarter window on "A-29" and "E" Cadillac styles.
  - k. Louver quarter stationary window on Pontiac "A-37" styles.
  - l. Vista vent glass and weatherstrip on styles so equipped.
  - m. Sliding sunroof panel when cover for panel is being replaced. Retract sliding panel if fabric roof cover only is being replaced.
2. Remove reveal molding clips across top and sides of windshield, quarter or back glass openings. On styles where fabric cover extends below back window remove reveal molding clips along bottom of back window opening. Clean off any excess adhesive caulking material adjacent to fabric roof cover material.
- NOTE:** In the event a repair type clip has been installed and retaining screw is not accessible, carefully trim roof cover around clip.

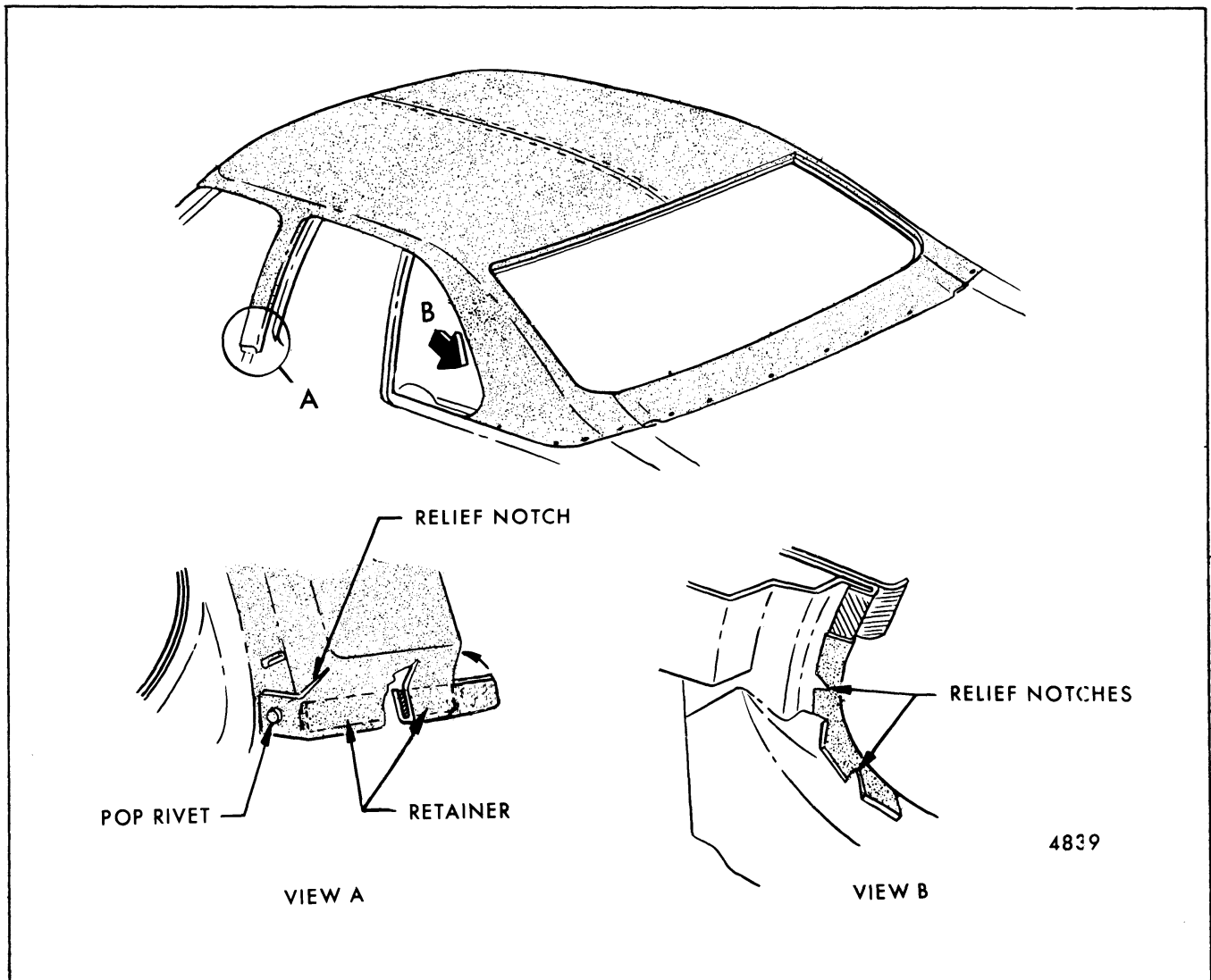


Fig. 8-16-Fabric Roof Cover Installation at Center Pillar and Quarter Window - "A-29" Styles

3. Remove all drive nails that are present in windshield and back window opening. Also, remove drive nails from door opening on 6CB69 styles (Fig. 8-15, View "D").

**CAUTION:** When removing drive nails, the edge of glass must be protected. Two to three layers of cloth body tape should provide the necessary protection.

**NOTE:** Drive nails can best be removed by first driving a screwdriver or suitable tool under the nail heads to loosen them. Diagonal cutters or similar tool can then be used to grasp nails and twist them out. Unnecessary enlargement of holes in roof panel should be avoided.

4. On "A-29" styles drill out four pop rivets and remove retainers (Fig. 8-16).
5. Prior to removing fabric cover, application of heat to cemented areas will permit easier loosening of cemented edges.

**CAUTION:** Heat may be applied by lamps held 18" (minimum) from fabric only until fabric is warm. If lamps are held too close or fabric cover is heated over 200 degrees fahrenheit, the fabric may lose its grain, blister, or become very shiny.

6. Loosen all cemented edges of fabric roof cover, then, carefully remove fabric cover from remaining cemented area of roof panel.

### Installation - Styles With or Without Integral Pad and/or With or Without Roof Panel Moldings

1. Completely mask off areas of roof panel which are not covered by fabric cover. Mask upper windshield or reveal moldings, windshield glass, back window, roof opening on sunroof or vista vent option, all doors and flat painted surfaces (hood, rear compartment lid, etc.).
2. Check all cementing surfaces on body to insure a smooth surface. Cementing surface must be smooth to prevent "highlighting" of excess cement through fabric cover after new cover has been installed. Clean off old cement as required. In the event any metal finishing is performed on roof panel, repaired area must be painted.

**NOTE:** A xylol solvent, such as 3M Adhesive Cleaner or equivalent, should be used to remove or smooth out excess old cement. Apply solvent and allow to soak before rubbing.

**CAUTION:** Be certain to follow manufacturer's directions when using cleaner.

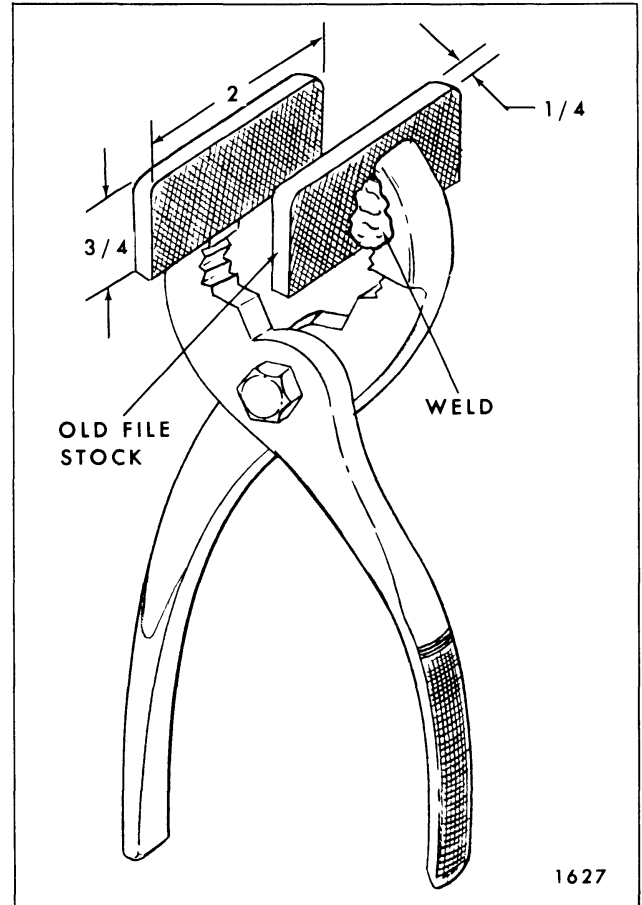


Fig. 8-17-Fabric Roof Cover Pliers

3. Where possible, install new cover at room temperature (approximately 72 degrees), to permit easier fitting and removing of wrinkles from new cover assembly.

**NOTE:** Where new cover is installed at temperatures below 72 degrees, fabricated pliers will aid in removing wrinkles (see Fig. 8-17).

4. Determine centerline of roof panel by marking center points on windshield and back window opening with tape or equivalent.
5. To locate and mark the center of a cover without a center seam lay cover on roof panel and fold cover lengthwise, precisely at center location. Mark center location at front and rear of cover. On station wagon styles, mark center location on right and left rear body lock pillar.
6. Remove cover from roof panel and lay cover with lining side upward on a clean flat surface.
7. Apply an even application of nitrile non-staining vinyl trim adhesive (such as 3M Vinyl Trim Adhesive, Permalastic Vinyl Trim Adhesive or

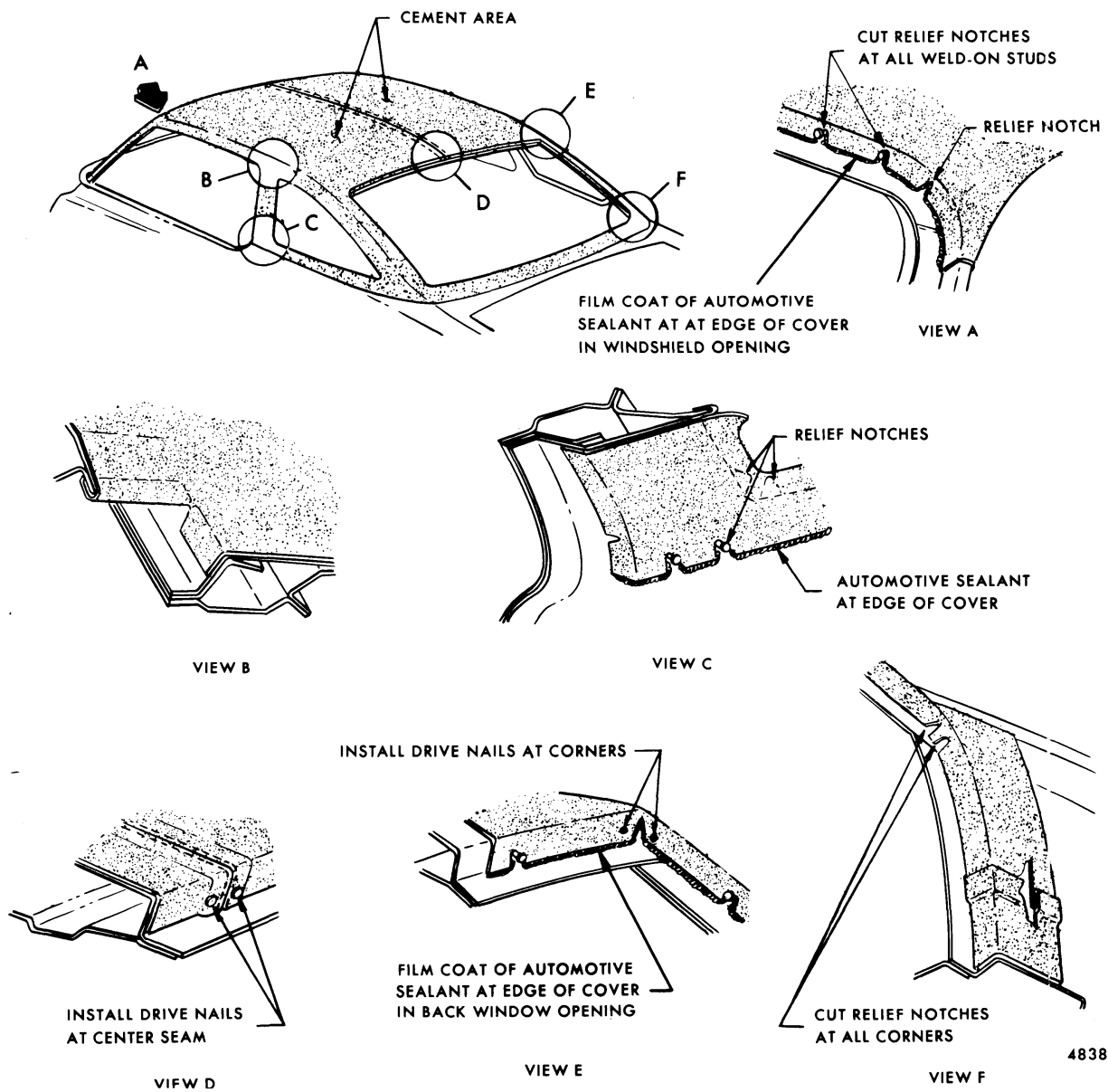


Fig. 8-18-Typical Fabric Roof Cover Installation - "A" Styles

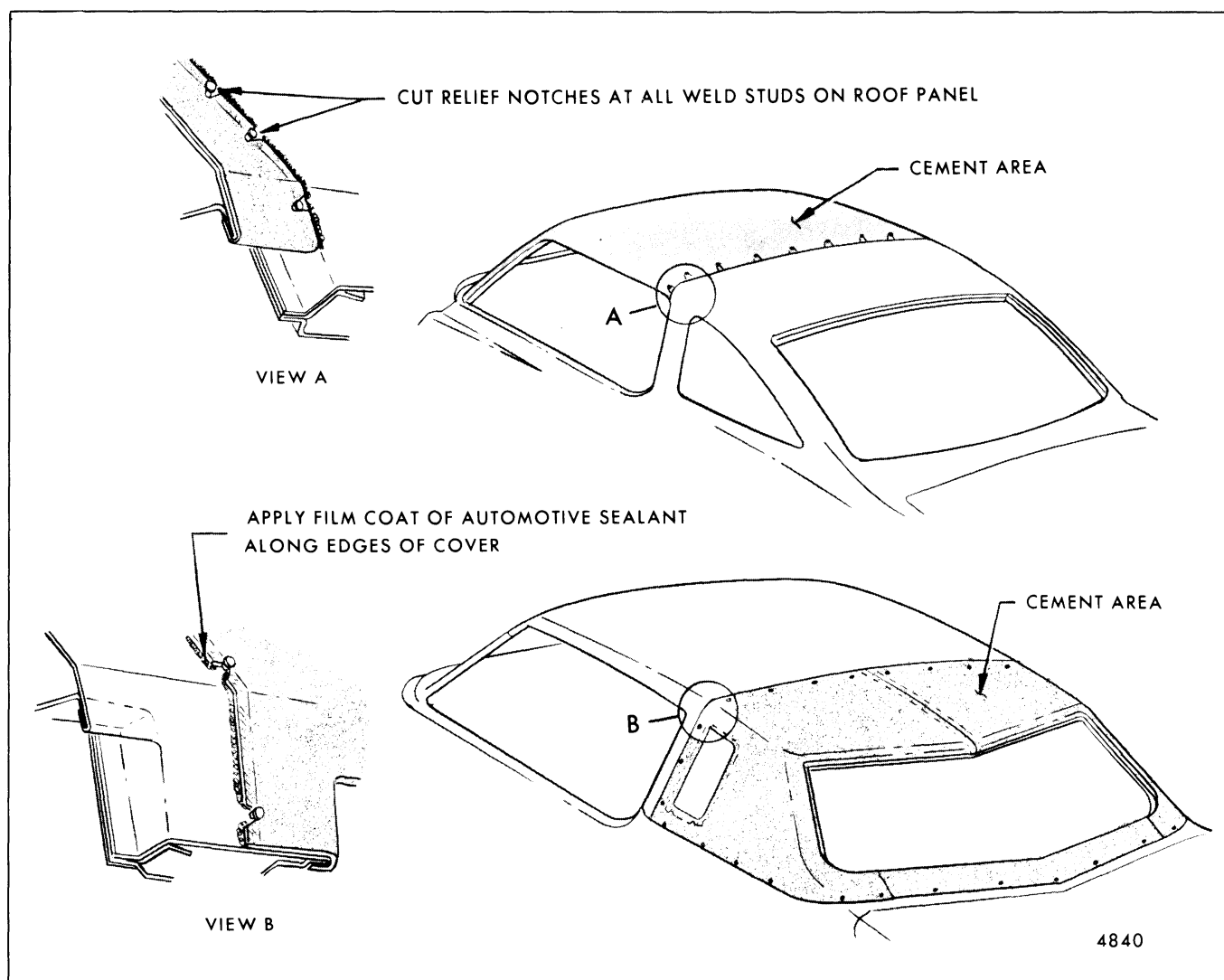


Fig. 8-19-Typical Partial Fabric Roof Cover Installation with Roof Panel Moldings

equivalent) over entire lining side of fabric cover.

**NOTE:** It is recommended that the vinyl trim adhesive be applied with a spray gun. As an alternate method, a brush or roller may be used. If spraying method is utilized, a spray gun with a pressure cup, specific fluid tip, and air cap should be used (or equivalent).

The recommended air pressures are as follows:

- a. Air line pressure - 50 lbs.
- b. Cup pressure - 2 to 4 lbs.

Permalastic, 3M Vinyl Trim Adhesive or equivalent purchased in the field is of spraying consistency. If rolling method is used, a mohair type roller should be utilized. Make certain ce-

ment is applied evenly and there are no high-lights from excess cement build-up.

- 8. Allow cement on fabric roof cover to dry thoroughly.
- 9. Lay cover on roof panel and align to correspond with centerline of roof panel. Determine proper material overhang at windshield and back window openings (approximately 2" overhang at seam area at back window and windshield opening and at center pillars on 6CB69 and "A-29" styles).
- 10. Fold one half of cover back at centerline and apply nitrile type vinyl trim adhesive to exposed half of roof panel (Do not include drip molding or roof extension area). Starting in center at centerline and working toward drip molding, cement cover to area while cement is wet. As cover

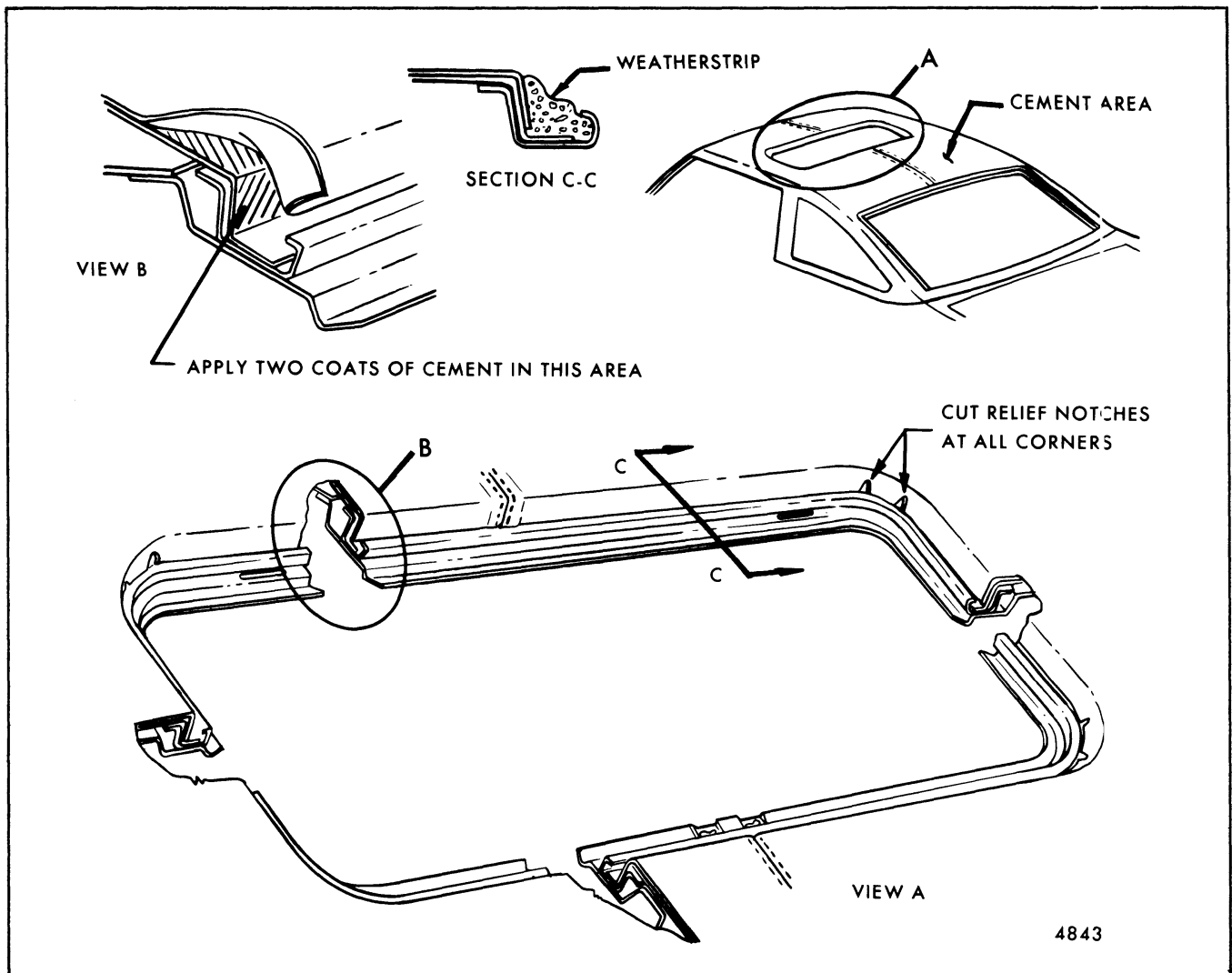


Fig. 8-20-Fabric Roof Cover Installation - Vista Vent Option

is being "unfolded" and cemented, it should be thoroughly "slicked" down to avoid wrinkles or air bubbles.

11. Repeat Step 10 on opposite side of roof panel.

**NOTE:** Make certain that cover is free of wrinkles and seams are straight. Fabric cover pliers may be used in aiding removal of wrinkles.

12. Cut relief notches in cover at all weld-on studs and angle cuts as required in corners of window openings (Fig. 8-15). Apply cement to window openings and cement cover in openings. In the event a reveal molding clip cannot be removed, trim cover around clip and cement cover down behind clip.

**NOTE:** Make certain a continuous and positive bond exists when cementing cover in the back window opening.

13. Protect the edge of glass when installing drive nails in window openings. Drive nails installed at seams should be located as low in window opening as possible. Use an awl or similar tool to initiate a hole where drive nails to be installed.

14. Install drive nails in door opening on 6CB69 styles (Fig. 8-15, View "D").

15. Apply cement to roof extension areas and below back window opening on styles where cover extends below back window.

**NOTE:** Use care when applying cement in the stationary quarter window area on "A-37,57" styles. The roof cover cement and the quarter window bonding material are not compatible.

16. On styles where cover extends below back window opening, cement cover in that area prior to performing Step 17.

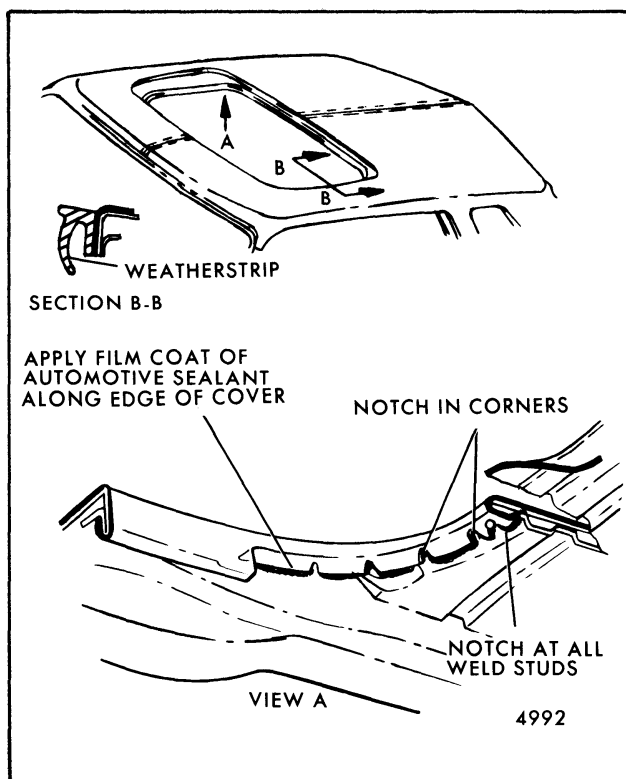
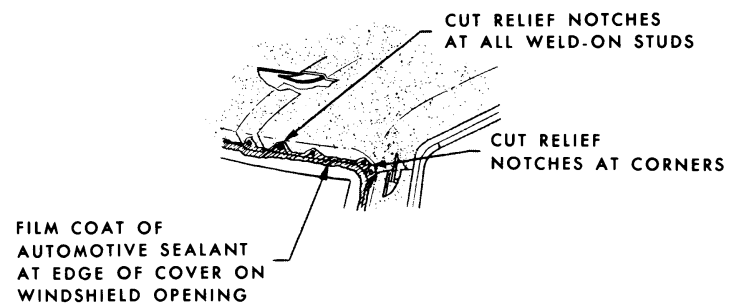
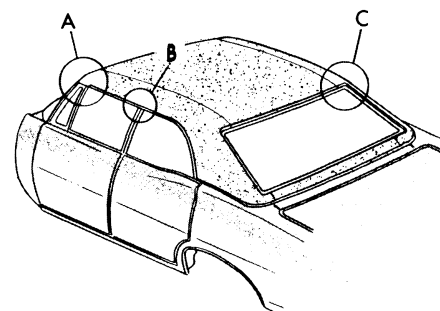
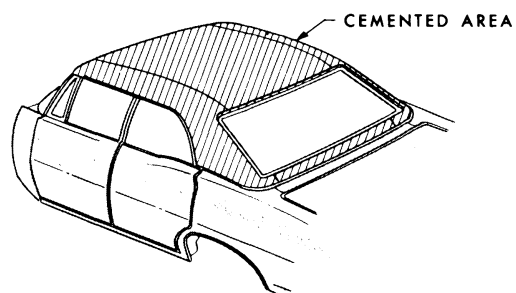
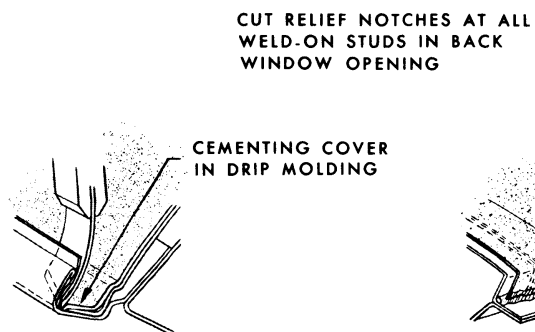


Fig. 8-21-Fabric Roof Cover Installation - Sunroof Option

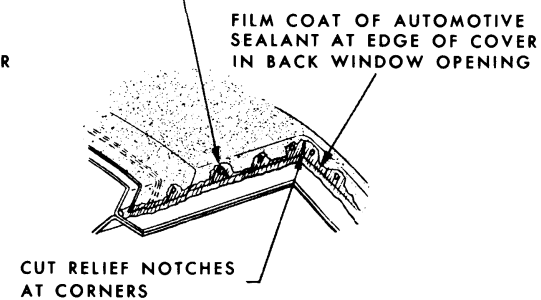
17. Cement cover at roof extension areas by pulling cover down and rearward. When operation is completed, fabric cover should be free of all wrinkles and draws in this area.
  18. Cement cover into side of back window opening. If weld-on studs are present, cut relief notches in cover.
  19. On styles where roof panel cover extends down windshield pillar, cement fabric roof cover to windshield pillar.
  20. On styles equipped with roof panel moldings, trim fabric cover in a line slightly outboard of weld-on studs on roof panel. **DO NOT DAMAGE PAINT FINISH.** At front corners, raise cemented edge of cover and using scissors or sharp knife cut radius so roof panel moldings cover cut edge. Re-cement fabric cover to roof panel. Remove masking tape from roof panel (Fig. 8-14).
  21. On all styles, trim material along belt line at roof extension area. On styles where fabric cover extends below back window, trim cover along rear end belt molding area. If it is necessary to trim material from outer edge of fabric cover around windshield or back window opening, raise cemented edge and cut as required.
  22. On the sunroof or vista vent option, trim and cement cover in the roof opening as required (Figs. 8-20 and 8-21).
  23. On styles where roof cover extends into drip moldings or fold around roof panel pinchweld flange, at side rail, perform the following:
    - a. On "X" styles, cement cover into and around outboard side of drip molding and trim cover along outside bottom edge of molding (Fig. 8-25).
    - b. On "A, B, C, E, and F" styles, cement cover around and to the underside of pinchweld flange at side rail and trim cover as shown in Figure 8-24, View "C".
- NOTE:** When trimming cover, tool J-21092 or equivalent may be used (Fig. 8-26).
24. On station wagon styles where the cover assembly extends down the rear body lock pillar, cement cover into the door and quarter window openings (Fig. 8-24).
  25. Apply a "film" coat of silicone sealant such as Dow Corning Automotive Sealant, General Electric RVP Sealant, or equivalent, to the edge of cover in windshield and back window opening, quarter window, back body opening and at belt area; also, at edges on roof panel when roof panel moldings are used. Make certain edge of material around all reveal molding clips that were not removed is also sealed (Figs. 8-22 and 8-14).
  26. On styles outlined in Steps 23 a. or b., install drip scalp moldings or weatherstrip retainer and finishing moldings. These moldings aid in retaining the fabric roof cover.
  27. Remove all previously installed protective covering from windshield, back glass and body.
  28. Install all previously removed moldings and assemblies.
- NOTE:** Normally, minor creases or fold marks will gradually disappear after cover assembly has been in service. In the event slight bubbles or wrinkles exist in fabric cover, they can be repaired as follows:
- a. Pierce bubble with small needle.
  - b. Apply a dampened shop towel over area.
  - c. Using a low heat home-type flat iron, apply iron to dampened towel using back and forth



VIEW A



VIEW B



VIEW C

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Fig. 8-22-Typical Fabric Roof Cover Installation Without Roof Panel Moldings - "X" Styles



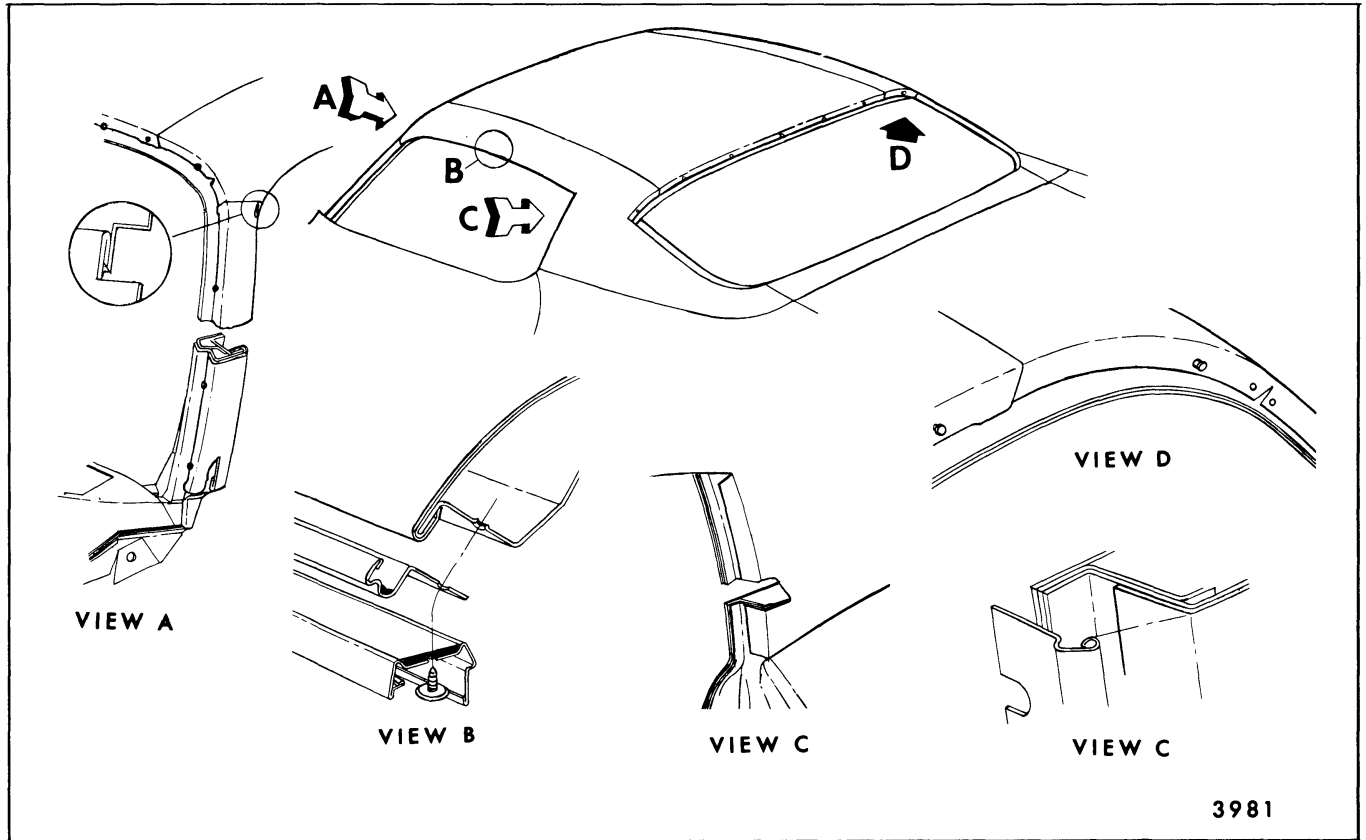


Fig. 8-23-Typical Fabric Roof Cover Installation Without Roof Panel Moldings - "F" Styles

strokes until wrinkle or bubble disappears. Be certain shop towel does not become dry as excess heat will permanently damage fabric roof cover.

## SUNROOF OPTION - SLIDING PANEL FABRIC COVER

### Removal

1. Remove the following prior to removing fabric cover from sliding sunroof panel (see Fig. 8-27).

A. Sliding Sunroof Panel

B. Weatherstrip

C. Retainer

2. Prior to removing fabric cover, application of heat to cemented areas will permit easier loosening of cemented edges.

**NOTE:** Apply heat as previously outlined for fabric roof cover removal.

3. Loosen all cemented edges of fabric cover, then carefully remove fabric cover from remaining area of sliding panel.

### Installation

1. Determine and mark center of panel.
2. Mark center location at front and rear of fabric cover.
3. Lay cover on a clean surface with lining side up.
4. Apply adhesive to entire lining side of fabric cover. The type of adhesive and method of applying same as covered in fabric roof cover installation.
5. Allow adhesive on fabric cover to dry.
6. Lay cover on sliding panel and align to correspond with center line(s) on panel.
7. Fold one half of cover back at center line and apply adhesive to exposed half of sliding panel. Starting at center and working outward cement

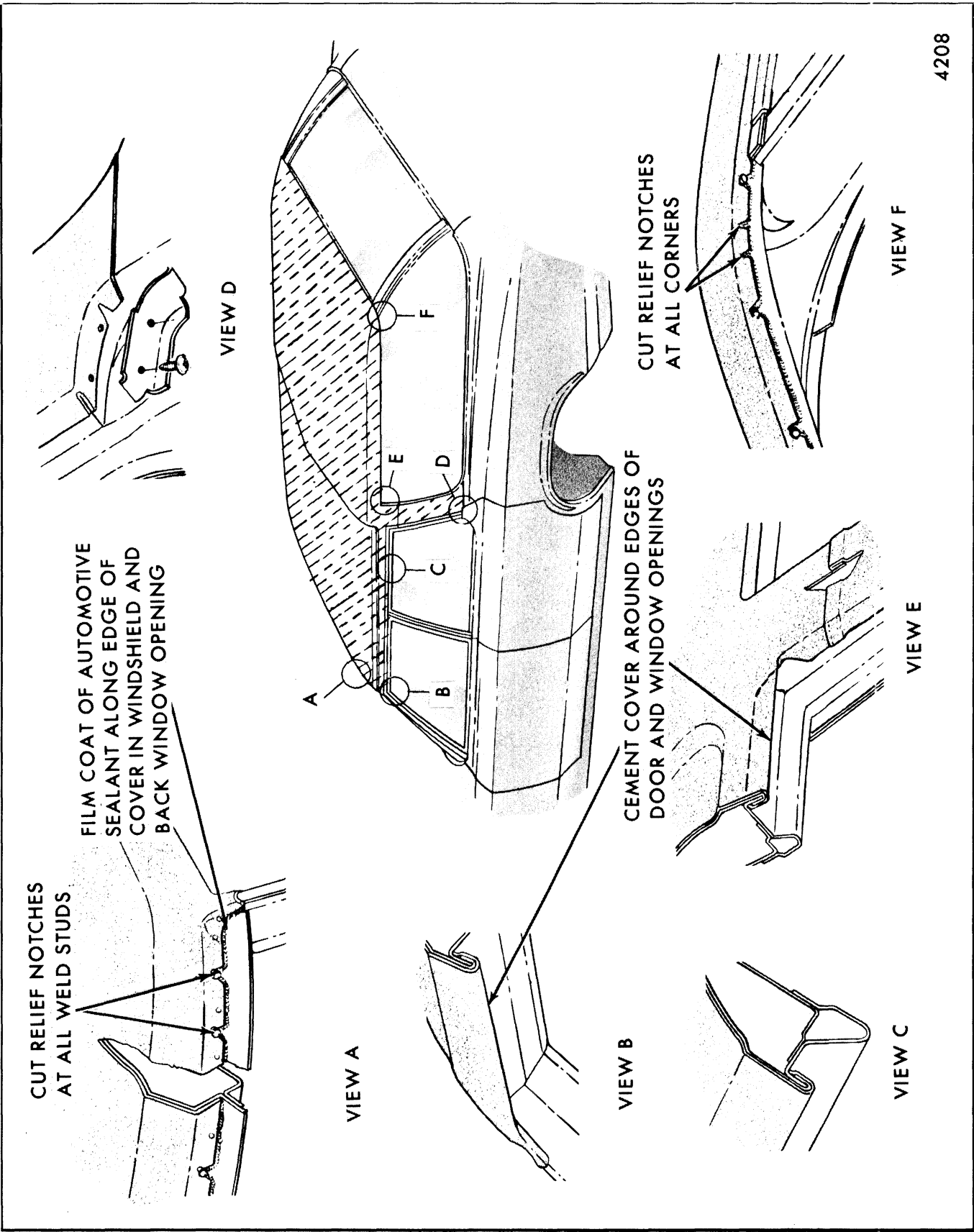


Fig. 8-24-Typical Fabric Roof Cover Installation - Station Wagon Styles

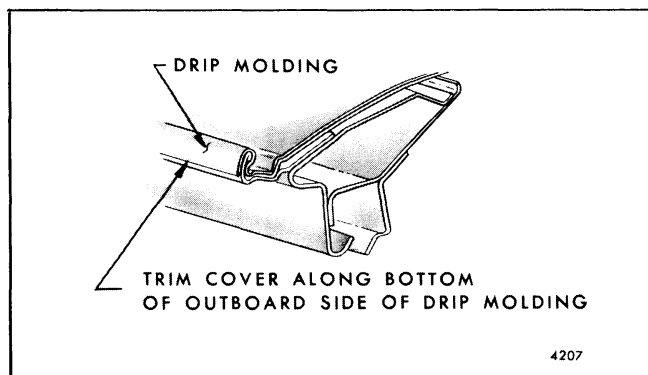


Fig. 8-25-Trimming Fabric Roof Cover at Drip Molding Area

cover to panel while area is wet. As cover is being unfolded, it should be thoroughly "slicked" down to avoid wrinkles and bubbles.

8. Repeat Step 7 on opposite side of panel.

**NOTE:** Fabric cover pliers may be used in aiding removal of wrinkles.

9. Notch cover at corners.
10. Apply adhesive to inside of flange area and slick cover in place.
11. Trim excessive material at rear flange.
12. Apply adhesive to weatherstrip and contacting surface at rear of panel, then install weatherstrip and retainer (Fig. 8-27).
13. Install sliding sunroof panel in roof opening.

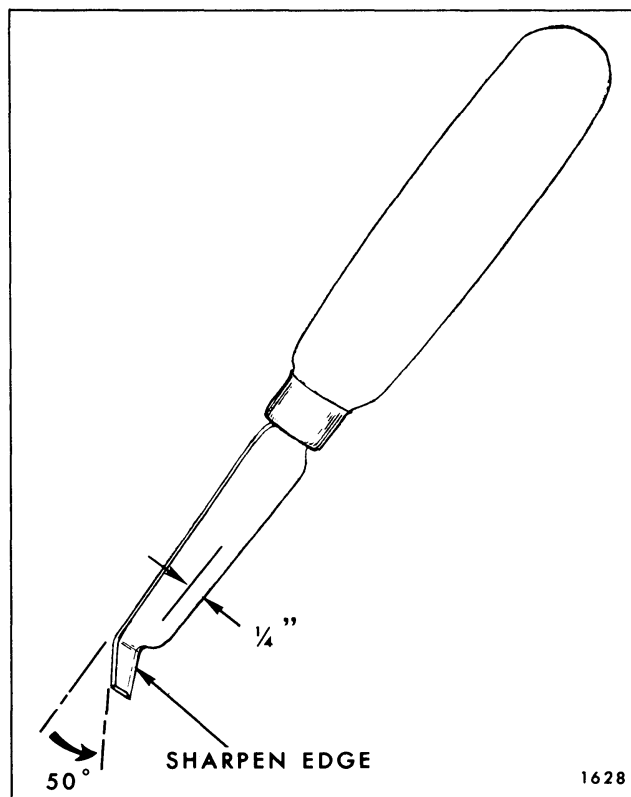


Fig. 8-26-Fabric Cover Trimming Tool

**NOTE:** Normally minor creases or fold marks will disappear after assembly has been in service. If however, wrinkles, creases, or bubbles do exist after cover has been installed, they can be removed by following the procedure outlined for fabric roof cover installation.

## FABRIC ROOF COVER DISCREPANCY REPAIR

### DESCRIPTION

The fabric roof cover material is a vinyl coated fabric which exhibits a grain pattern in the exterior vinyl surface. In the event the vinyl surface becomes damaged, (cut, scuffed, gouged or torn) it is possible in most cases to make repairs without removing the cover assembly from the roof panel (see Figs. 8-28 and 8-29).

The repair procedures which follow describe two separate methods.

1. Repair utilizing a teflon coated metal graining tool, heating iron, and a variable heat control unit, Figure 8-30.

2. Repair utilizing a fabricated plastic body filler graining die and a heat gun, Figure 8-31.

### REPAIR PROCEDURE UTILIZING TEFLON COATED GRAINING TOOL - All Styles Except Cadillac

#### Equipment and Material Requirements

1. Repair tool kits for graining and curing vinyl repair patching compound are available as follows:
  - a. Kit J-23091 (or equivalent) includes graining tool J-23091 -1 (or equivalent), heating iron

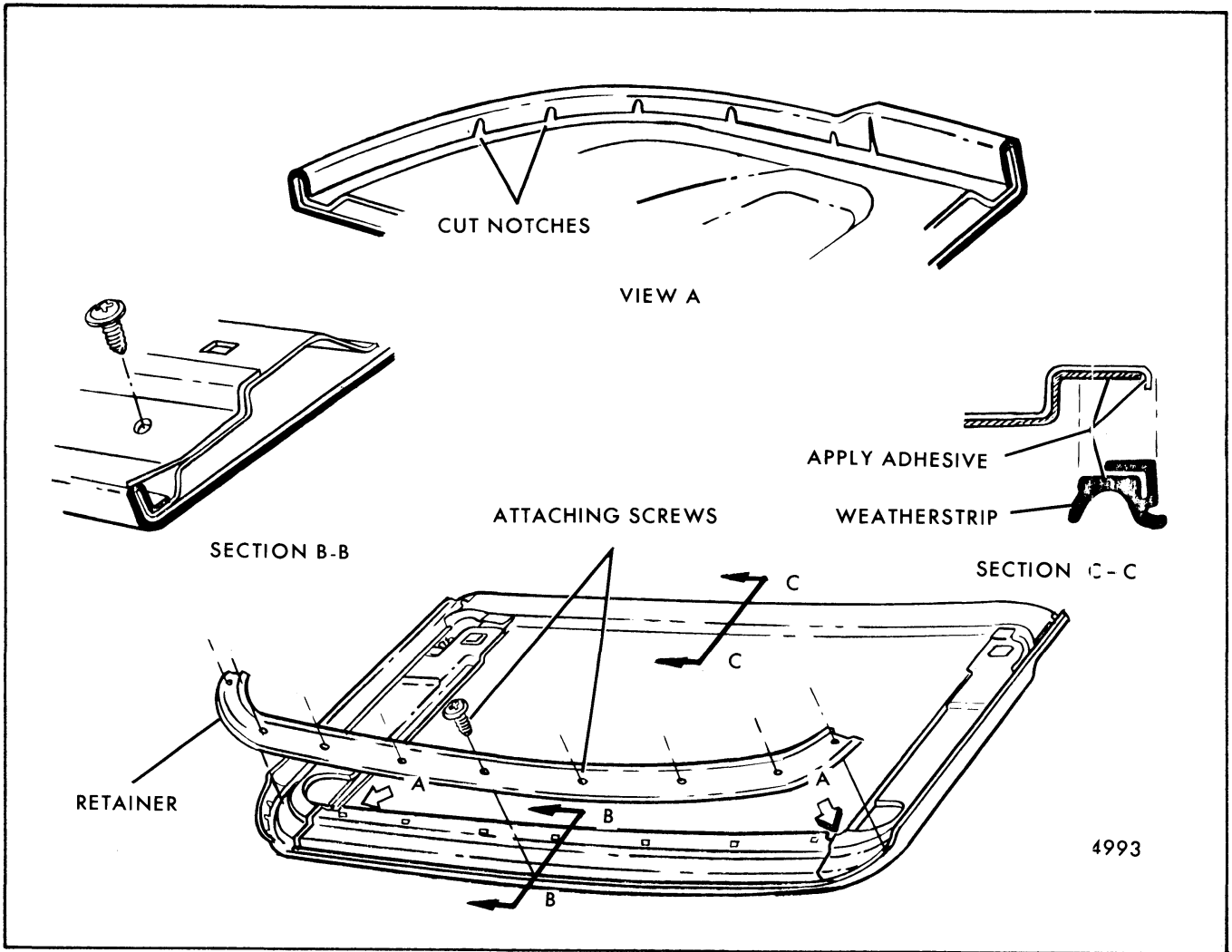


Fig. 8-27-Fabric Roof Cover Installation on Sliding Sunroof Panel

and stand tool J-23091-2 (or equivalent) and variable heat control tool J-23091-3 (or

equivalent) and is applicable for 1973 and prior model year fabric roof cover material (Fig. 8-30).

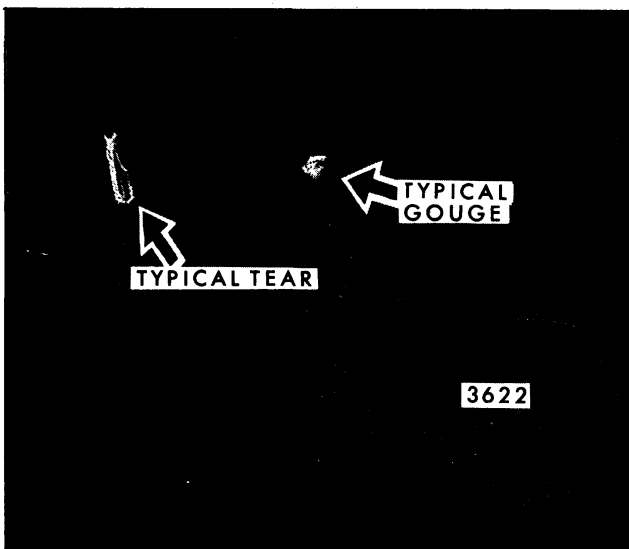


Fig. 8-28-Typical Fabric Roof Cover Discrepancy

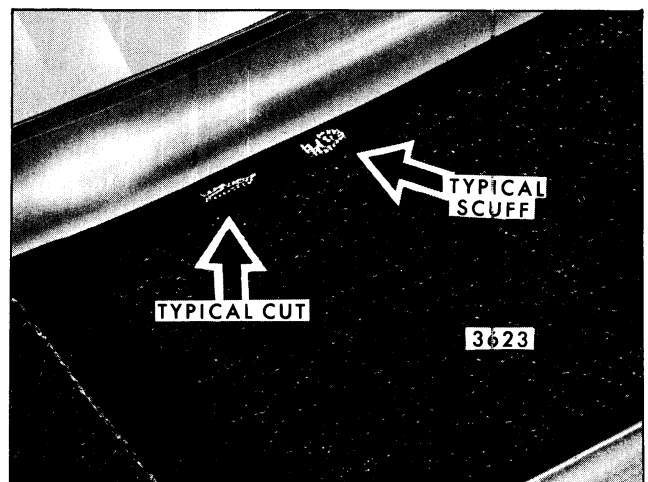


Fig. 8-29-Typical Fabric Roof Cover Discrepancy

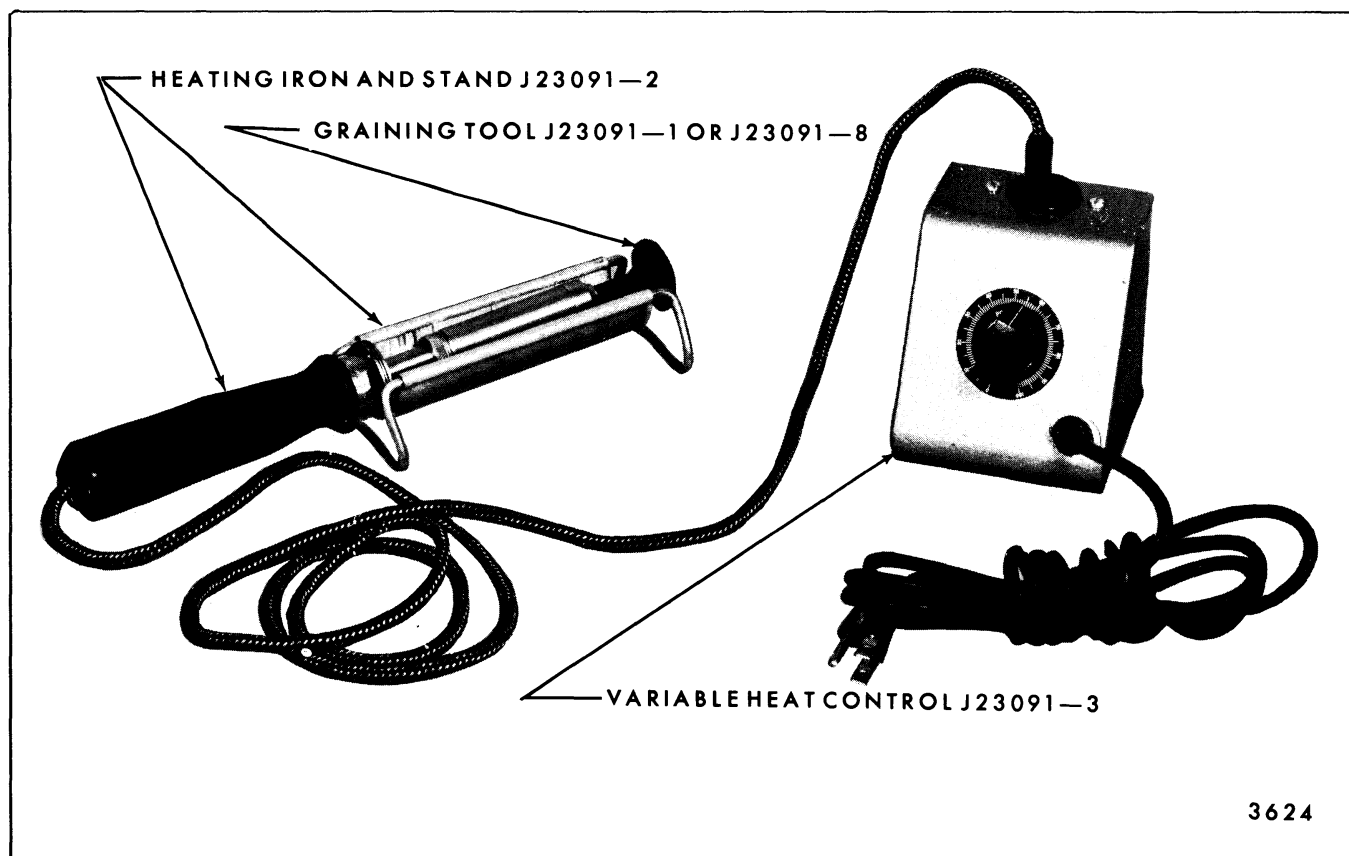


Fig. 8-30-Fabric Roof Cover Repair Tool

**NOTE:** Each component part of Kit J-23091 or equivalent is serviced individually.

2. Pallet knife - A small trowel used for applying vinyl repair patching compound (Fig. 8-32).
3. Razor or Sharp Knife - to be used for removing frayed edges from damaged area prior to application of vinyl patching compound (Fig. 8-32).
4. Vinyl Cleaner (Detergent Type) - all purpose cleaner for removal of surface dirt, grease dust, etc. from extremely dirty roof covers.
5. Vinyl Cleaner (Solvent Type) - for removal of wax, silicone, oil, etc. from repair area prior to paint application (Fig. 8-32).
6. Vinyl Repair Patching Compound - a heat curing milky colored heavy bodied plastisol for repairing cut, torn, scuffed or gouged vinyl roof cover material (Fig. 8-32).
7. Vinyl Repair Paint - an approved, durable, waterproof, weather resistant and pliable vinyl coating for refinishing vinyl coated fabrics.

### Repair Procedure

1. Pre-heat graining tool at 60 setting, plus or minus 2, on variable heat control (J-23091-3 or equivalent) for a minimum of 15 minutes or until the temperature has reached 300 degrees.
2. Prepare surface as follows:
  - a. If cover has an over-all soilage, clean repair area with detergent type all purpose vinyl cleaner.
  - b. Mask-off areas adjacent to repair area (body panels, moldings, glass etc.).
  - c. Using a razor knife, trim the damaged area to remove all frayed or damaged edges (Fig. 8-33).

**NOTE:** Trimming of vinyl at damaged area should be kept to a minimum. On cuts, scuffs or gouges with clean unfrayed edges, no trimming is necessary.

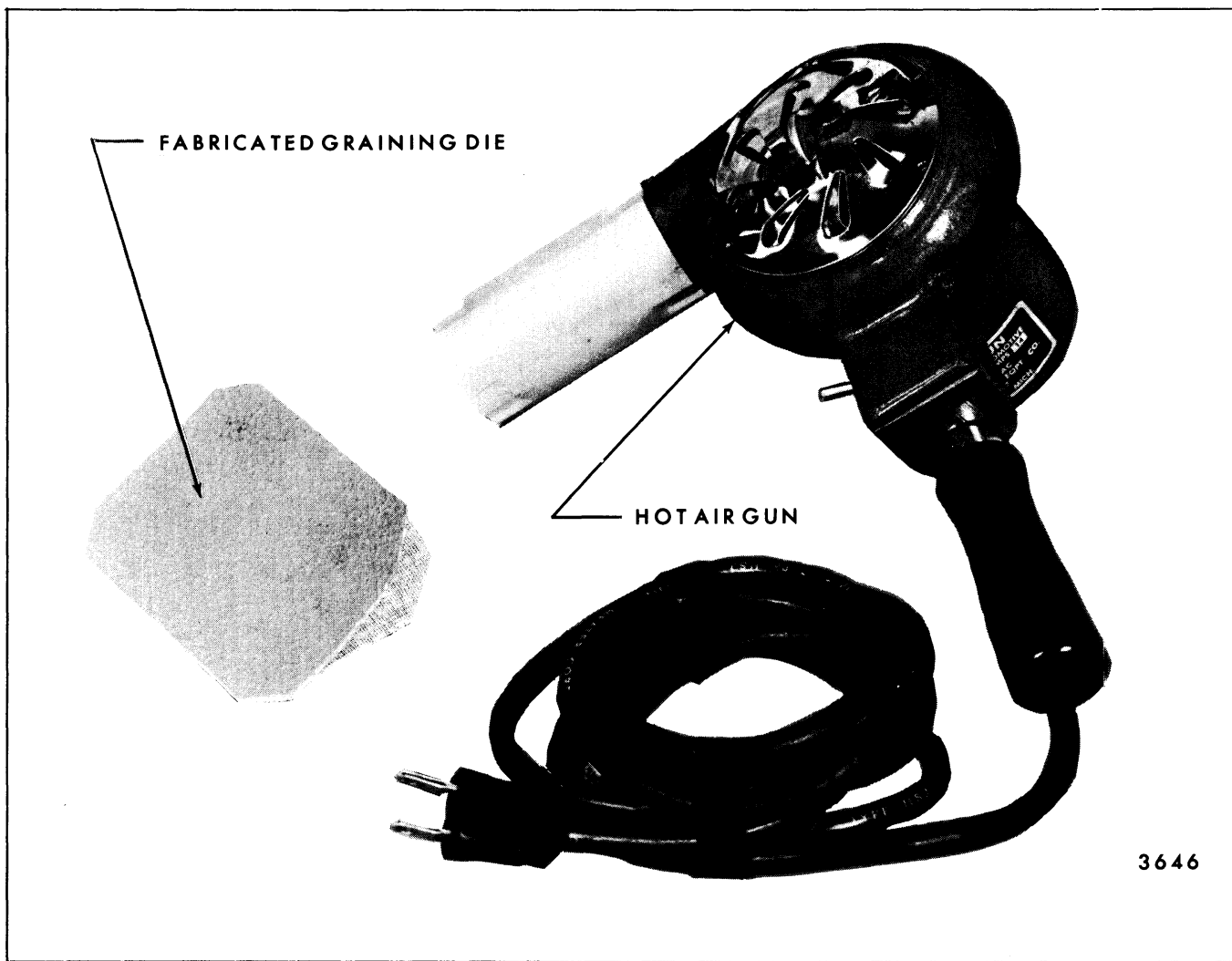


Fig. 8-31-Fabric Roof Cover Repair Die and Hot Air Gun

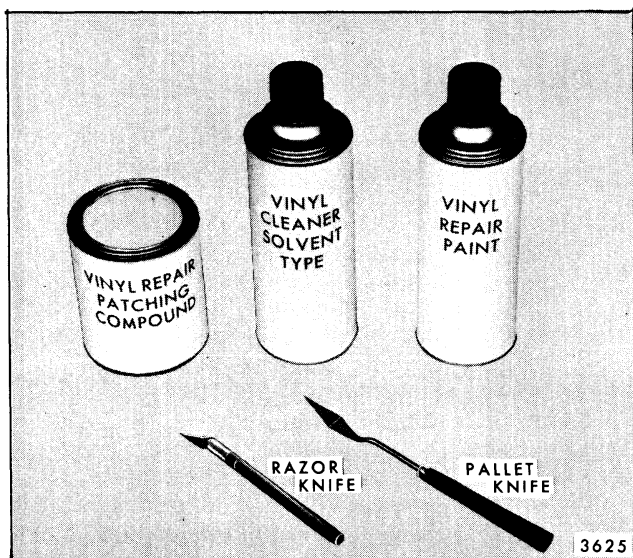


Fig. 8-32-Fabric Roof Cover Repair Materials and Tools

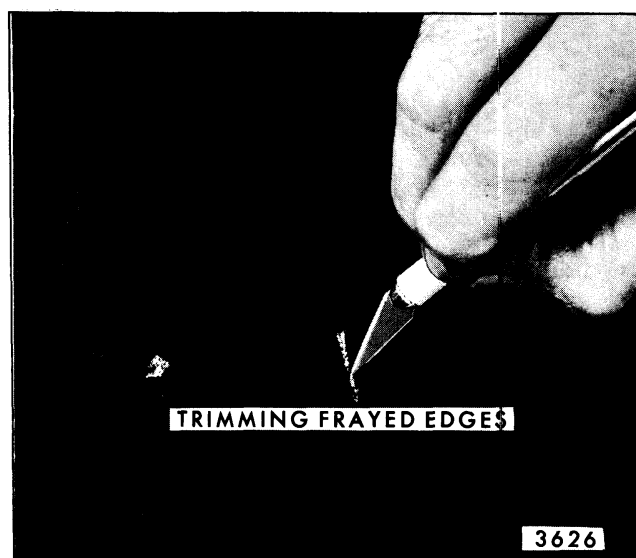


Fig. 8-33-Fabric Roof Cover Repair Trimming

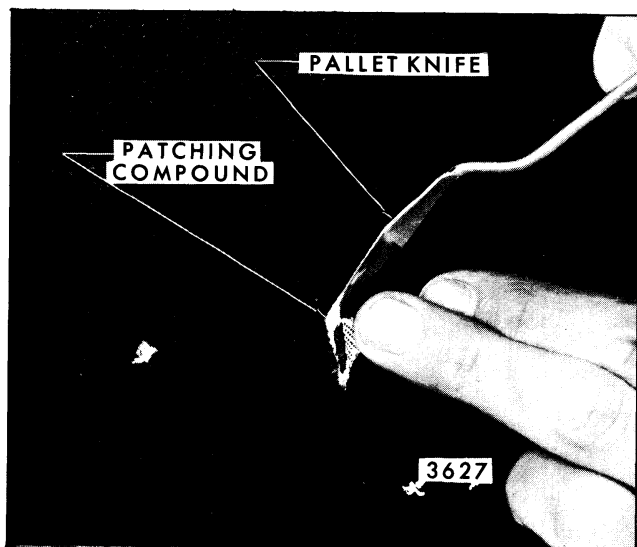


Fig. 8-34-Vinyl Repair Patching Compound Application

3. On damaged areas where no trimming was necessary, apply vinyl patching compound to edges of area as shown in Figure 8-34. Where trimming was required, apply compound to area being repaired and trowel flush with adjacent surface as shown in Figure 8-35. Remove any excess material (compound) with clean cloth.
4. Graining operation is performed by exerting light hand pressure and applying preheated graining iron over damaged compound filled area for approximately one and one half minutes (see Figs. 8-36 and 8-37). Curing and graining time can be increased slightly depending on size of repair.

**NOTE:** During graining operation, it is important that the iron be held in a stable, perpendicular position. The use of the tool must be compatible to the repair area surface (round edge in drip rail areas; tapered edge adjacent to reveal moldings;

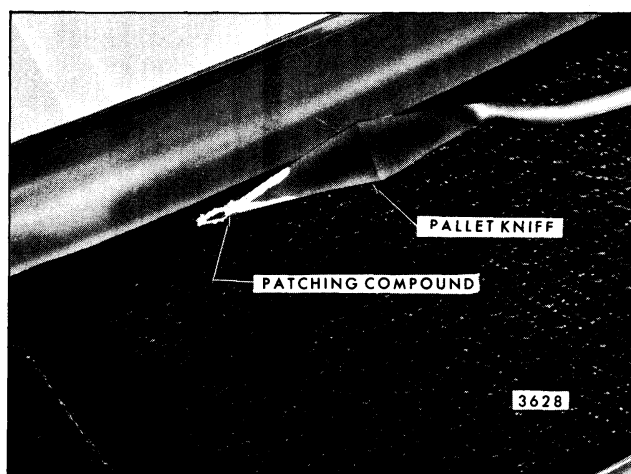


Fig. 8-35-Vinyl Repair Patching Compound Application

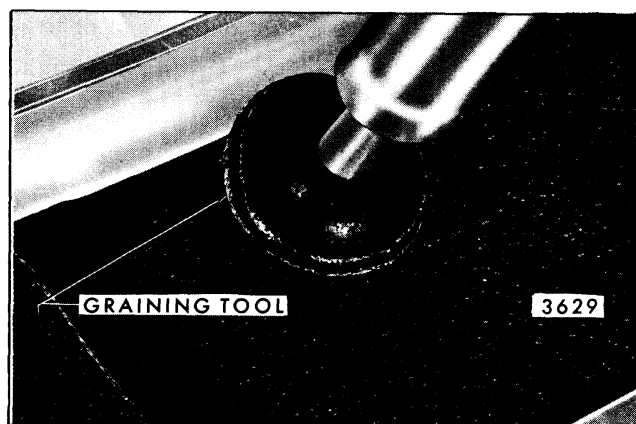


Fig. 8-36-Vinyl Patching Compound Curing and Graining

crown surface for flat areas). For large repairs, repeat curing and graining using an over-lapping technique.

After graining operation is completed, clean the graining tool with solvent type vinyl cleaner and apply a small amount of silicone to prevent adhesion of vinyl paint during future usage of tool.

5. Apply vinyl paint (solid colors) as follows:
  - a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner to remove any wax, silicone, oil, etc. that may be present.
  - b. Thoroughly mix the vinyl color according to instructions on the container. If an aerosol type container is used, pre-test spray pattern on a piece of paper; then apply vinyl color to repair with two or three light passes. Use a "fanning" motion to create a feathering condition around the perimeter of the spot repair.

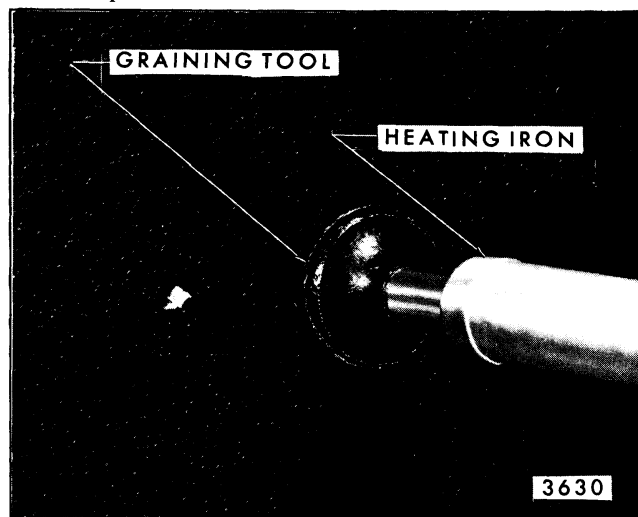


Fig. 8-37-Vinyl Patching Compound Curing and Graining

**NOTE:** Heavy wet coats of paint must be avoided.

## REPAIR PROCEDURE UTILIZING FABRICATED PLASTIC GRAINING DIE

### Equipment and Material Requirements

The following describes the materials and equipment required to repair minor cuts, scuffs, gouges or tears on vinyl coated fabric roof covers:

1. Plastic Body Filler and Hardener - a two-part material for fabricating a graining die with an impression of the grain present in the vinyl surface of the fabric roof cover (see Fig. 8-31).
2. Liquid Detergent Cleaner - all-purpose cleaner for removal of surface dirt, grease, dust, etc.
3. Vinyl Cleaner (Solvent Type) - for removal of wax, silicone, oil, etc. from repair area (see Fig. 8-32).
4. Vinyl Repair Patching Compound - a heat curing milky colored heavy-bodied plastisol for repairing damaged area (see Fig. 8-32).
5. Vinyl Repair Paint - an approved, durable, water proof, weather resistant, pliable vinyl paint for final color refinishing (see Fig. 8-32).
6. Pallet Knife - a small trowel for applying patching compound to repair area (see Fig. 8-32).
7. Heat Gun - used to cure vinyl patching compound, preferably 500 degrees to 700 degrees heat range (Fig. 8-31).

### Repair Procedure

1. To fabricate a graining die, select a scrap piece of roof cover fabric of the same grain design as area being repaired. Clean grain surface using a detergent type cleaner and allow the surface to dry completely while molding compound is being mixed.
2. Using a non-porous mixing surface, mix the plastic body filler as instructed on container label as follows:

**NOTE:** A porous mixing surface, such as cardboard, will absorb the hardening agent. This will cause improper curing of hardener.

- a. With a thin-bladed tool, spread the mold compound on previously prepared grain surface. Maintain a 1/8 inch thick application, approximately 2 inches wide and 6 inches long. Spread material from the center toward outer edges. Immediately after application of mold material, place a scrap piece of vinyl material, cloth side down over mold and apply light finger pressure. The mold will cure in 10 to 15 minutes. Heat may be applied to accelerate curing process.
  - b. After curing, the entire mold can be removed from vinyl cover. Trim excess vinyl backing and any area that is unsatisfactory in grain pattern (outer edges of mold etc).
  3. Prepare surface as follows:
    - a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner. Allow area to dry completely.
- CAUTION:** Protect adjacent painted surfaces.
- b. Utilizing a razor knife, scalpel or other suitable tool, trim any frayed edges from damaged area. The damaged area should be trimmed to a minimum of 1/8 inch in width. This will permit easier filling process. A slight tapering angle of the repair surface walls provides greater surface for filler adhesion.
  4. The vinyl patching compound is applied (using a pallet knife) in a succession of thin layers to the repair area. Cure material thoroughly after each layer with heat gun. Continue to apply patching compound until the top layer is flat to the surrounding surface level.
  5. Thorough curing of patching compound is necessary for proper adhesion of each layer and can be accomplished with use of a heat gun. The filler is a milky substance which becomes almost transparent when properly cured. Heat should be directed to the repair area until the compound becomes transparent.

**CAUTION:** Too much heat can result in loss of grain texture. To avoid overheating, attention should be given to the vinyl being exposed to heat. As heat is applied, the adjacent vinyl areas will begin to show a glossy appearance. When this occurs, the vinyl has reached working temperature. Further heating will result in loss of grain.

6. Perform graining operation as follows:

- a. After the last layer of filler material has been cured, the graining operation is performed.



This operation must be performed prior to cooling of filler material. Using heat gun, apply heat directly on repair area. Continue heat application until vinyl begins to become glossy. At this temperature, successful graining can be achieved.

- b. After heat has been applied, press the graining die into the soft vinyl. If possible, graining should be accomplished on the first attempt. To minimize loss of pattern uniformity. Apply steady, even pressure to the back of graining die to provide an even impression.
7. When graining has been completed, the repair area is ready for application of vinyl paint (solid colors) as follows:
    - a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner to remove any wax, silicone, oil, etc. which may be present.
    - b. Thoroughly mix the vinyl color according to instructions on the container. If an aerosol type container is used, pre-test spray pattern on a piece of paper; then apply vinyl color to repair with two or three light passes. Use a "fanning" motion to create a feathering condition around the perimeter of the spot repair.

**NOTE:** Heavy wet coats of paint must be avoided.

## REPAIR OF CUTS ON PADDED ROOF COVERS

On certain styles an integral padded vinyl roof cover is available. The basic repair procedure is the same

as previously outlined, but some modifications are required.

### Repair

When repairing covers equipped with a pad, patching compound applied to the damaged area must not be allowed to contact the pad. Also the application of heat is important. Good repairs can be made by the following methods.

1. Without detaching the cover from the roof panel, working through the point of damage, insert a piece of waterproof tape under the cut with the adhesive side out. The tape should be large enough to cover the opening, plus sufficient surface to adhere to the back side of the cover. Press the cover against the tape to form a backing for the repair operation and prevent the filler from contacting the pad.
2. To avoid over heating, attention should be given to the vinyl exposed to heat. As heat is being applied, the adjacent vinyl areas will begin to show a glossy appearance. When this occurs, the vinyl has reached working temperature. Further heating will result in loss of grain.
  - a. The Cadillac cover has a high gloss finish; therefore, the glossy appearance which is normally used as an extreme heat indicator will react differently. The gloss appearance develops at a lower temperature than observed on covers having a dull finish. Closer attention is required to insure against excessive heat application of the roof cover assembly.

## SUNROOF

### DESCRIPTION

A metal sliding sunroof is available as an option on "A"-37 and 57 styles for Chevrolet, Pontiac and Buick. The sunroof feature permits opening of a sliding section of roof panel to admit sunshine and outside air into the passenger compartment (Fig. 8-38).

The power-operated version of the sunroof is controlled by a two-position switch mounted in the windshield header safety pad area (Fig. 8-39).

The manual version of the sunroof is operated by a folding type crank handle also located in the windshield header. Counterclockwise rotation of the handle opens and clockwise rotation closes the sunroof. The crank handle is stowed in a recessed escutcheon when not in use (Fig. 8-42).

During the opening cycle, the sunroof panel retracts down and rearward on guide rails into a storage space between the headlining and the roof. During the closing cycle, the sunroof moves forward and as it nears the end of forward travel, the rear portion

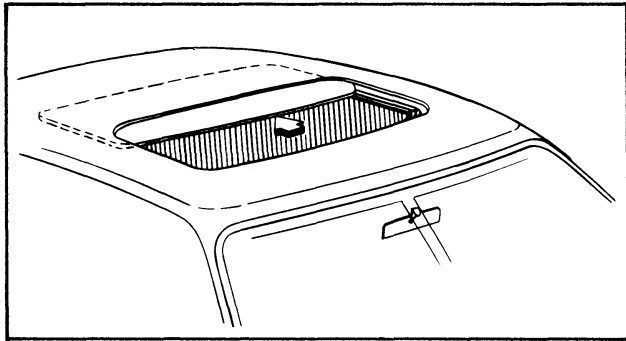


Fig. 8-38-Exterior View (Sunroof Partially Open)

initially moves upward on two ramps (Fig. 8-40); the lifter then places the panel flush with the roof surface and seals it within the roof opening. The sunroof (power-operated or manual) may be left partially open in either direction of travel.

The power operated sunroof can be closed or opened manually in the event of electrical malfunction. To do this, remove the small round plug located in the center of the headlining near the front edge of the roof opening to gain access to the driving gear. Remove the plug by grasping with fingers and pulling downward (Fig. 8-39). Using the auxiliary crank tool provided with the power sunroof option, remove the screw, which is visible when the plug is removed.

**CAUTION:** Observe the number and type of washers removed with the screw. The screw and washers provide adjustment for the drive clutch.

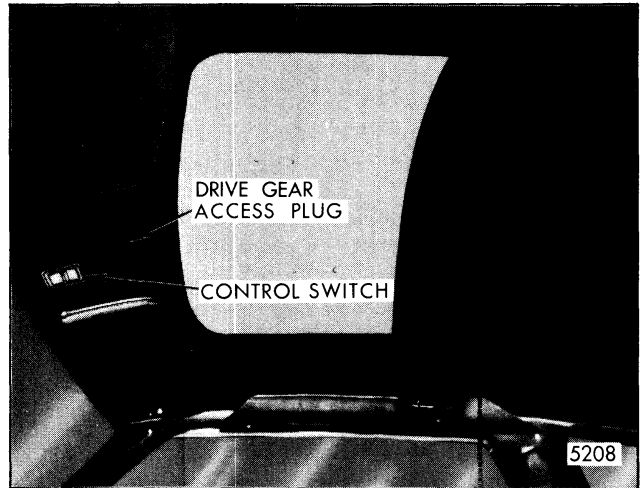


Fig. 8-39-Control Switch and Drive Gear Access Plug

Insert the end of the auxiliary crank tool into the crank tool slot in the drive gear (Fig. 8-41). Turn crank handle clockwise to close or counterclockwise to open the sunroof. Remove the crank handle, install the screw with washers in their proper order, and tighten the screw securely. Then replace the round plug.

The power operated sunroof is driven by a 12-volt reversible motor with an integral gear drive mechanism. Both power operated and manual drive gear assemblies are mounted near the center of the windshield header forward of the sunroof opening (Fig. 8-45). The drive assembly (powered or manual) then

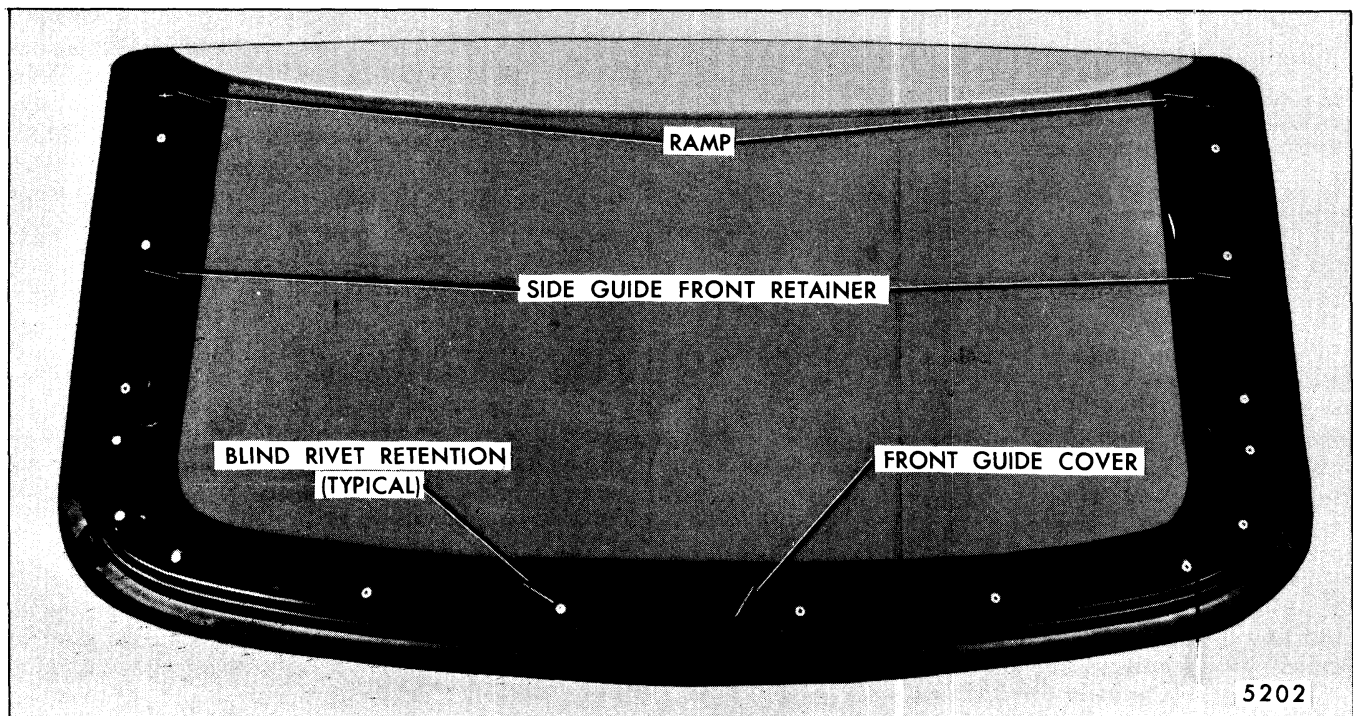


Fig. 8-40-Front and Side Guide Rail Covers

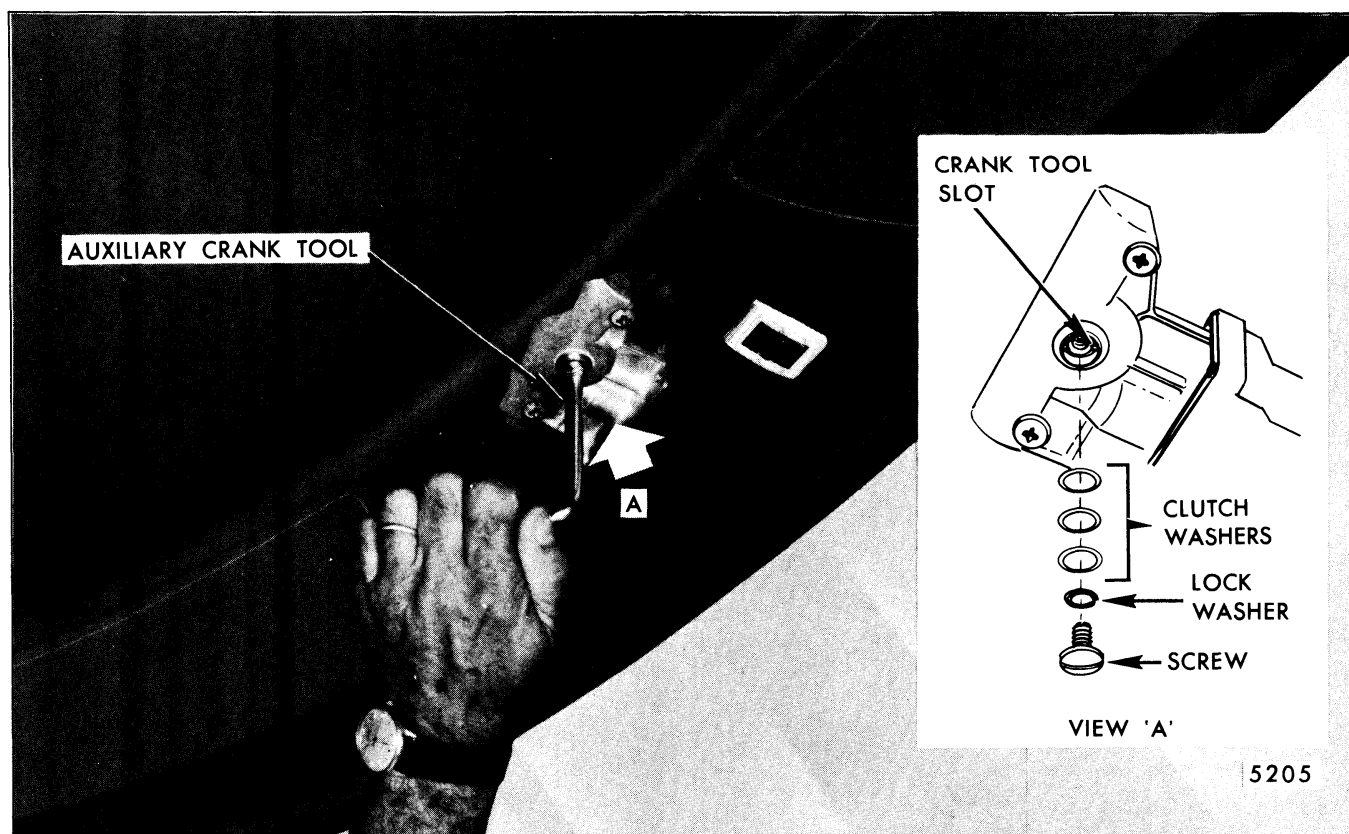


Fig. 8-41-Auxiliary Crank Tool Usage

drives two flexible gear cables that are attached to the sunroof sliding panel and control its movement.

For information on electrical circuitry, refer to "power operated sunroof" in the Electrical Section.

Four plastic drain hoses, one at each corner of the sunroof housing, are incorporated to catch water seepage that may by-pass the weatherstrip seal around the roof opening. The two forward hoses (Fig. 8-48), are routed through the right and left windshield pillars, and out through the front body hinge pillar below the belt line. The rear drain hoses are routed into the rear quarter panel forward of the rear wheel housings allowing water to drain through the rocker panel drain piercings.

During regular maintenance, check the two drain holes at the front corners of the sunroof housing to make certain they are open and free of foreign material. If drain holes or hoses are plugged, they can be cleaned with an air hose or flexible wire.

To clean rear drain hoses, use air pressure or flexible wire from the bottom of the tubes. The rear drain hose may be detached from its retaining clip through the rear compartment on "37" styles or by removing the quarter upper trim panel on "57" styles. Then pull the drain hose lower end through the quarter inner panel access hole ("57" styles) or rearward over the wheelhouse ("37" styles) for access to the lower end of the hose.

Figure 8-42 identifies hardware components of the sunroof assembly and their relationship.

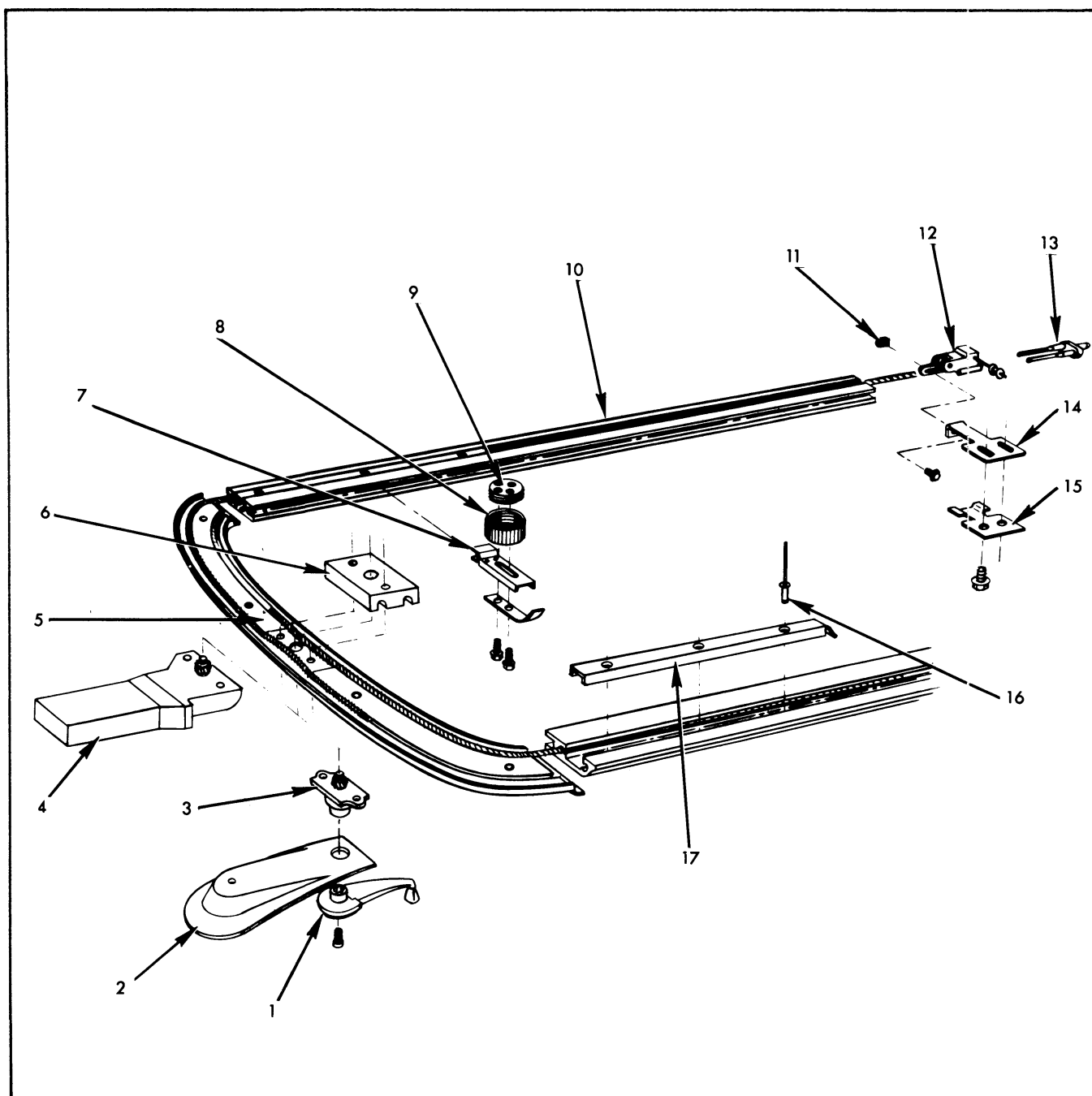


Fig. 8-42-Sunroof Hardware

- |   |                                   |                                     |
|---|-----------------------------------|-------------------------------------|
| 1. Manual Handle Assembly                       | 7. Front Guide Shoe Assembly      | 13. Sliding Panel Rear Stop         |
| 2. Manual Handle Escutcheon                     | 8. Front Guide Adjusting Nut      | 14. Rear Guide Plate                |
| 3. Manual Drive Assembly                        | 9. Front Guide Adjusting Stud     | 15. Rear Guide Plate Retainer       |
| 4. Motor and Drive Gear Assembly (Power Option) | 10. Side Guide Rail               | 16. Blind Rivet Retention (Typical) |
| 5. Cable Front Guide                            | 11. Rear Guide Adjusting Nut      | 17. Side Guide Rail Retainer        |
| 6. Cable Center Guide                           | 12. Rear Guide and Cable Assembly |                                     |

## SUNROOF DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Sunroof panel fails to rise or close completely (power-operated or manual).	<ol style="list-style-type: none"> <li>1. Panel misaligned.</li> <li>2. Cable guides misaligned.</li> <li>3. Too few clutch washers (power-operated only).</li> <li>4. Guide shoe jammed on guide.</li> <li>5. Lifter link misaligned vertically or damaged beyond repair.</li> <li>6. Damaged drive cable(s).</li> </ol>	<ol style="list-style-type: none"> <li>A. Align panel.</li> <li>A. Align front cable guide to side guide rail (shim if necessary).</li> <li>A. Add clutch washer(s) (power-operated only).</li> <li>A. Adjust guide shoe.</li> <li>A. Align lifter link vertically or - B. Replace both drive cable assemblies.</li> <li>A. Replace both drive cable assemblies.</li> </ol>
2. Sunroof motor inoperative (ignition switch "on").	1. "Short" or "open" within sunroof circuitry.	A. Refer checking procedure in Electrical Section.

## SUNROOF ADJUSTMENTS

### Vertical Adjustment at the Front of the Panel

**NOTE:** For access to adjustment provisions, detach headlining panel and slide it rearward into the sunroof housing for stowage (Fig. 8-43).

1. To obtain a flush fit with the roof, loosen 2 bolts on the front guide shoes (Fig. 8-44).

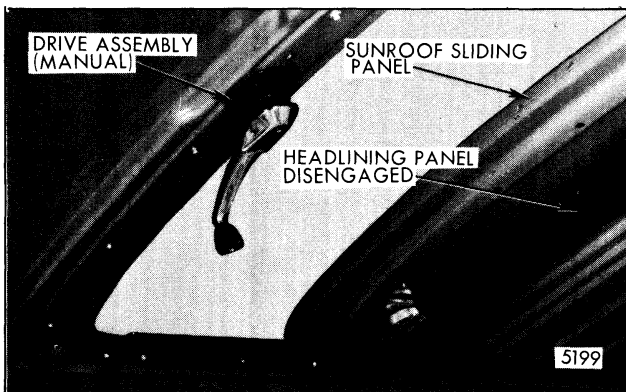


Fig. 8-43-Headlining Panel Disengaged

2. Turn front guide adjusting nut clockwise to lower roof panel and counterclockwise to lift panel (Fig. 8-44).
3. After proper alignment is obtained, tighten bolts.
4. Adjust opposite front guide in same manner if required.

### Vertical Adjustment at the Rear of the Panel

**NOTE:** For access to adjustment provisions, detach headlining panel and slide it rearward into the sunroof housing for stowage (Fig. 8-43).

1. To obtain a flush fit with the roof, loosen attaching screw on lifter link (View "A", Fig. 8-44).
2. Raise or lower panel to desired height using serrations provided on lifter link (View "A", Fig. 8-44).
3. After proper alignment is obtained, tighten lifter link screw.

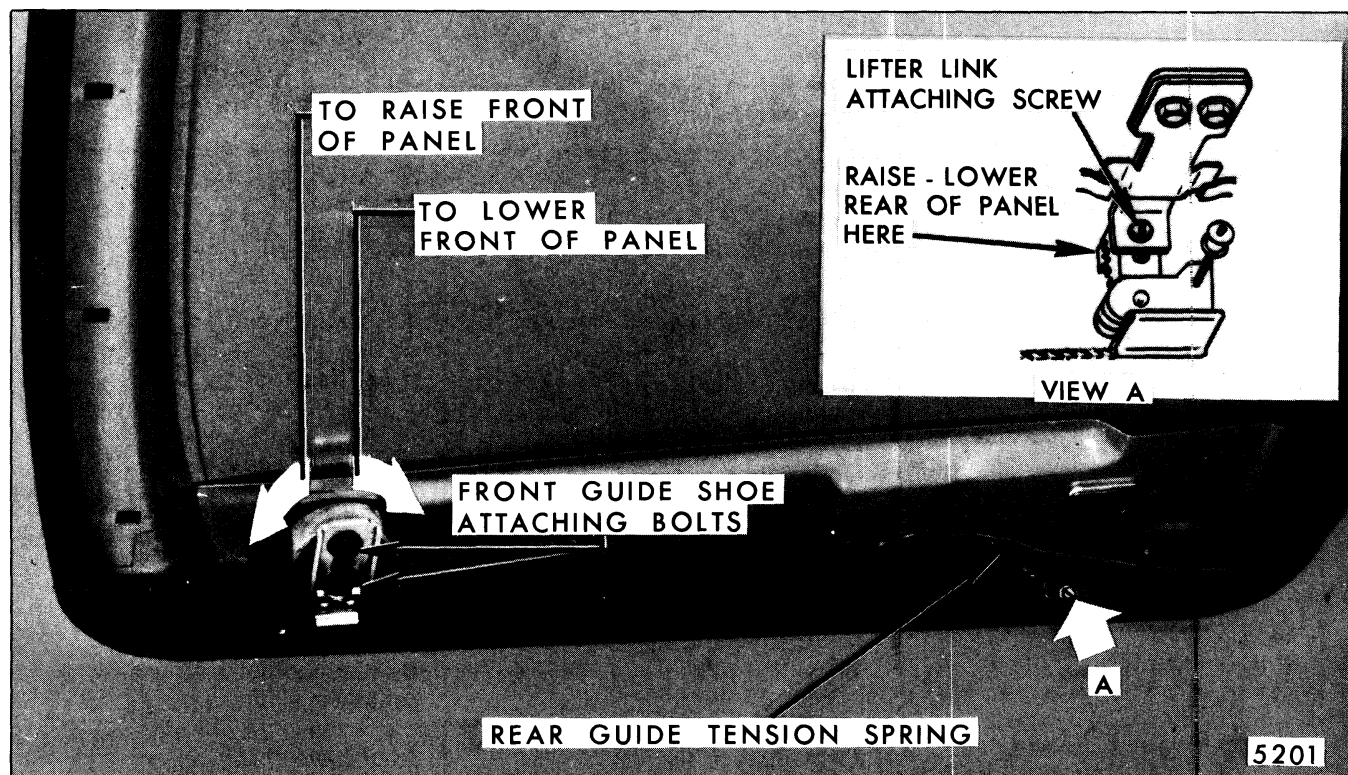


Fig. 8-44-Sunroof Panel Vertical Adjustment Provisions

4. Adjust opposite rear lifter link in same manner, if required.

#### Alignment of a Panel That Does Not Run True

1. Close roof panel to determine which side of panel jams.
2. With roof panel closed, remove drive assembly (manual sunroof) or motor and drive gear assembly (power operated sunroof) (Fig. 8-42).
3. Align panel within opening to desired position assuring constant margins.
4. Reinstall drive assembly.

#### Cable Guide Alignment

1. If roof panel jams during its travel, check alignment of front cable guide to side guide rail.
2. If necessary, shim front cable guide for alignment with adjacent side guide rail.
3. If panel fails to rise, check for low battery and/or possibly add more clutch washers (power operated only).

## MOTOR AND DRIVE GEAR ASSEMBLY

### Description

The motor is protected against any stall force imposed upon it by a slip clutch contained within the gear box assembly. Excessive clutch slippage, however, may be corrected by adding clutch washers (shims) under the screw which is threaded into the drive pinion at the bottom side of the drive gear assembly (Fig. 8-41). Additional clutch washers are available as a separate service item.

### Removal

1. Open sunroof panel.
2. Detach headlining trim lace across front of sunroof opening and remove windshield upper and side garnish moldings.
3. Remove drive pinion cover button at center of windshield header.
4. Remove operating switch (refer Control Switch - Removal).
5. Detach headlining across front of opening.
6. Remove safety header pad.

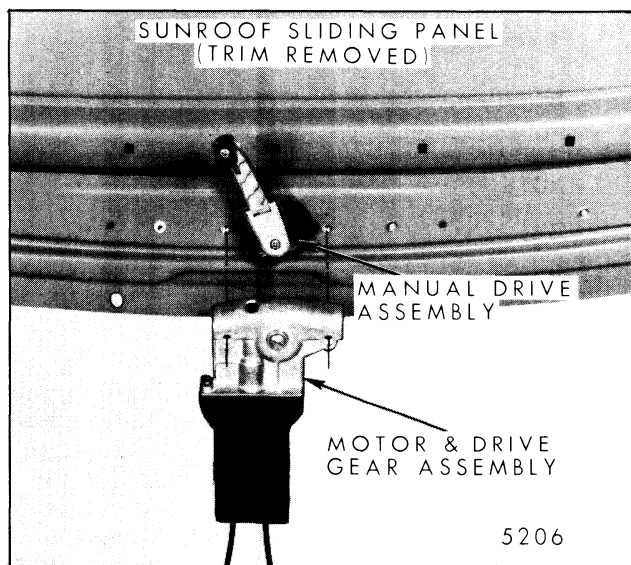


Fig. 8-45-Manual and Power Drive Oriented (Module Removed from Vehicle)

7. Remove electrical connectors from motor.
8. Remove motor and drive gear assembly (2 attaching bolts) (Fig. 8-45).
9. Remove motor from sunroof housing.

### Installation

**NOTE:** Before proceeding with the installation, align sunroof panel within the roof opening (refer to "Sunroof Adjustments").

1. Install motor and drive gear assembly to sunroof housing and drive two attaching bolts.
2. Connect electrical leads to motor. Check operation of sunroof. Adjust if necessary.
3. Install safety header pad and re-attach headlining.
4. Replace all previously removed parts.

## CONTROL SWITCH

### Removal

1. Carefully grip switch toggle bezel with fingers and pull switch out from retainer in headlining.
2. Pull electrical connector through opening and disconnect wires.

### Installation

1. Install connector wires on switch.
2. Install switch through front of headlining by pressing switch in until retaining clip engages.
3. Test switch for proper function.

## DRIVE ASSEMBLY (MANUAL SUNROOF ONLY)

### Removal

1. Open sunroof panel.
2. Remove crank handle at front of opening.
3. Remove handle escutcheon at center.
4. Remove manual drive assembly (2 attaching bolts) (Fig. 8-45).

### Installation

**NOTE:** Before proceeding with the installation, align sunroof panel within the roof opening (refer to "Sunroof Adjustments").

1. Install drive assembly to sunroof housing and drive two attaching bolts. Check operation of sunroof.
2. Install handle escutcheon and handle.

## HEADLINING PANEL

### Removal

1. Open roof panel approximately eight inches.
2. Snap headlining panel out by extracting retaining clips from roof panel front edge (clips remain in headlining assembly) (Fig. 8-43).
3. Retract roof panel to full open position.
4. Grasp headlining panel front edge and pull it forward and out of side guide rail lower channels and out of roof opening.

### Installation

1. Retract roof panel to full open position.

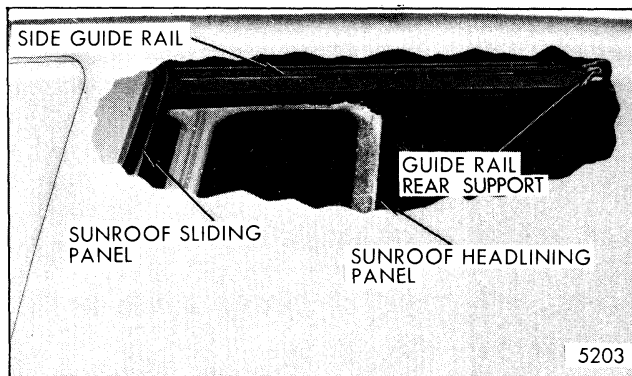


Fig. 8-46-Sunroof Panel Headlining Engagement in Side Guide Rail

2. Align headlining panel with side guide rail lower channels and move rearward into sunroof housing (Fig. 8-46).
3. Close roof panel part way, leaving it open approximately three inches.
4. Slide headlining panel forward and secure it to sunroof panel with retaining clips.

## SUNROOF PANEL

### Removal

1. Open sunroof approximately eight inches.
2. Remove headlining panel and slide rearward into sunroof housing for stowage. Close sunroof panel.
3. Remove outboard screw from each front guide shoe assembly (Fig. 8-47).
4. Loosen inboard guide shoe screw and rotate each front guide shoe assembly inboard to clear guide rail (Fig. 8-47).
5. Remove attaching bolts from rear guide retainer plate to sunroof panel. Remove retainer plates (Fig. 8-47).
6. Disengage rear slide tension springs from their respective rollers and pivot springs inboard (Fig. 8-47).
7. Lift roof panel at front edge and pull panel out of roof opening.

### Installation

1. With headlining panel in full rearward position, install roof panel into roof opening.

2. Pivot each front guide shoe assembly outboard and engage with side guide rails.
3. Install outboard screws and tighten both screws on each front guide (Fig. 8-47).

**NOTE:** Guide should not "bottom" against side guide rail.

4. Push roof panel to full forward position by hand.
  5. Lift rear of roof panel upward and actuate control switch or crank handle to position cable assembly at rear guide attaching plate into alignment with attaching holes on roof panel (Fig. 8-47).
  6. Install rear guide attaching plate retainer over rear attaching plate and install attaching bolts. Rotate rear slide tension spring cutboard and place on underside of roller (Fig. 3-44).
- NOTE:** Be sure end of retainer plate is inserted under tabs provided in sunroof inner panel.
7. Check operation of roof panel and note fit of panel to roof. If any adjustments are necessary, refer to "Sunroof Adjustments".
  8. Install headlining on sunroof panel.

## REAR GUIDE AND CABLE ASSEMBLY

### Removal

**NOTE:** If one cable assembly is defective replace both to assure parallel travel of sunroof.

1. Remove roof sliding panel, motor and drive gear assembly or manual drive assembly as previously explained.
2. Detach trim lace and headlining at sides of sunroof opening.
3. Working at the top edge of the sunroof opening, remove only the heads of three blind rivets that secure each side guide rail and retainer and ten rivets that secure the front guide cover (Fig. 8-40). Use a 5/32" drill bit for this operation.
4. Remove remainder of each rivet with drift punch and retrieve same from area between headlining and sunroof housing.
5. Remove cable center guide (two bolts) and four screws that secure cable front guide (Fig. 8-42).



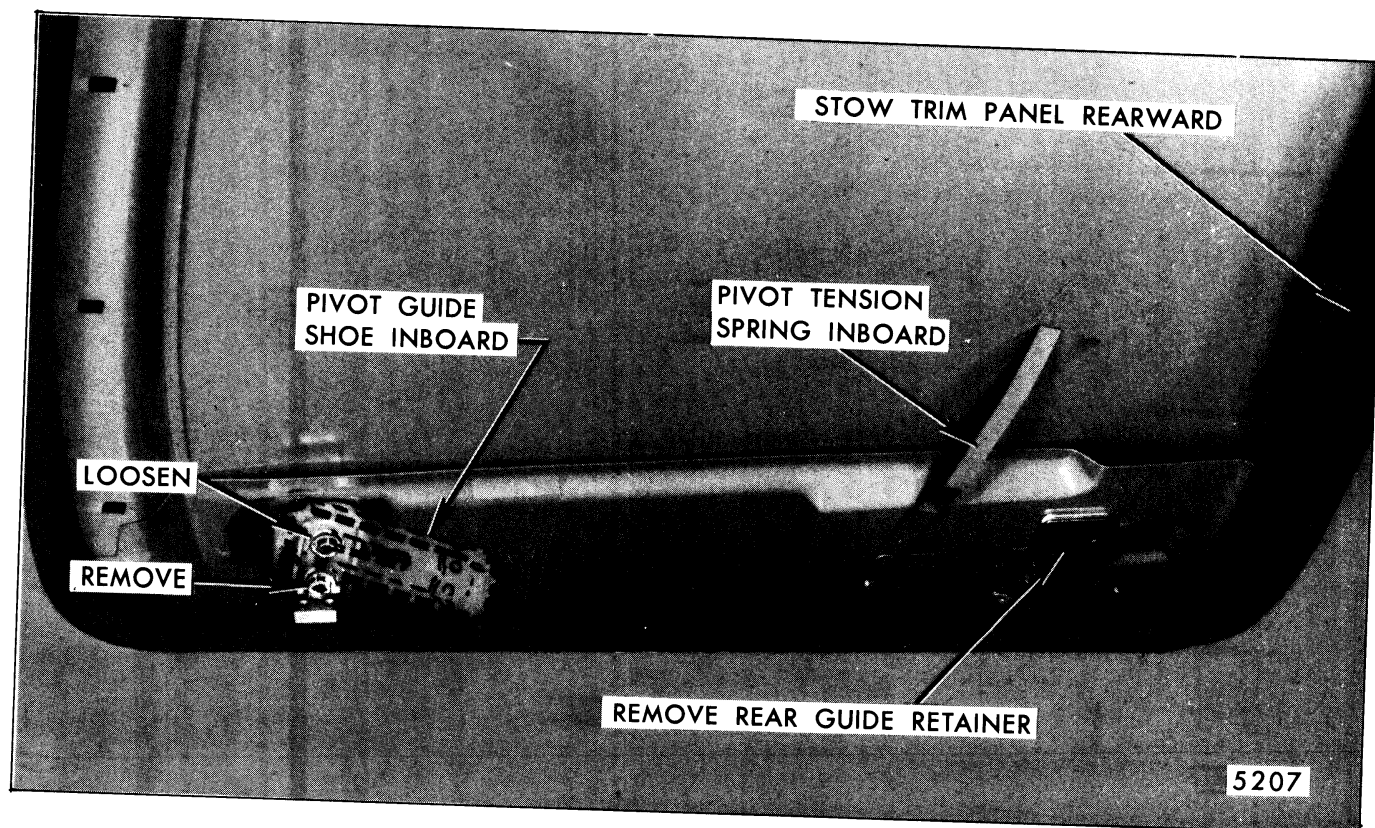


Fig. 8-47-Sunroof Panel Removal

6. Disengage side guide rail to front rail and pull rear guide and cable assembly forward out of side guide rail (Fig. 8-42).

**NOTE:** If removal of side guide rail is desired, pull same forward for disengagement from guide rail rear support (Fig. 8-46).

### Installation

1. Insert guide and cable assembly into proper channel of side guide rail and move guide rearward beyond location of side guide rail retainer.

**NOTE:** Insert left cable into inboard channel of left guide rail and right cable assembly into outboard channel of right guide rail.

2. Engage front guide with side guide rail and drive front guide attaching screws (Fig. 8-42).
3. Install side guide rail retainer. Use 5/32" x 1/2" steel countersunk blind rivets (3 places) for this operation.

4. Place cable in proper channel of front guide and pull both right and left guide and cable assemblies against respective ramps (rear edge) of side guide rail retainers (Fig. 8-42).
5. Lubricate cables and cable channels at cable front guide location with Lubriplate No. 70 or equivalent and install cable center guide (Fig. 8-42).

6. Install the drive assembly (manual or electric) after assuring that both right and left rear slide and cable assemblies are positioned identically (refer Step No. 3).

**CAUTION:** This operation is critical to assure roof panel alignment and prevent cable damage.

7. Install sunroof panel as previously explained and cycle panel to check alignment within roof opening. Install cable front guide cover with 5/32" x 1/2" steel countersunk blind rivets.
8. Install all remaining hardware and trim components.

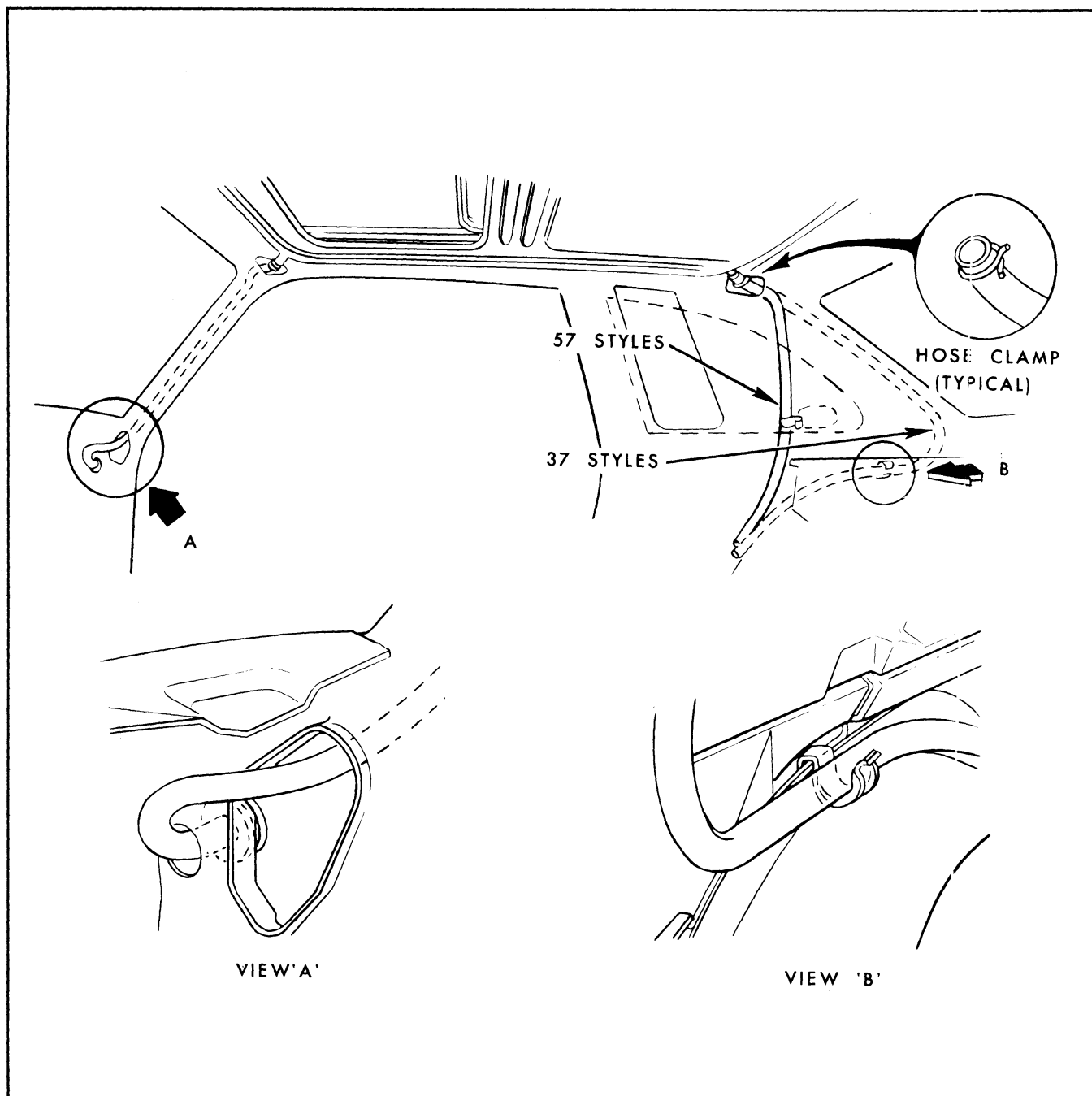


Fig. 8-48-Sunroof Drain Hose Routing

## SUNROOF HOUSING DRAIN HOSE REPLACEMENT

### Removal and Installation - Front

1. Remove windshield and roof side trim moldings in the affected area and detach headlining sufficiently to gain access to top of either drain hose (Fig. 8-48).
2. Remove shroud side trim panel.
3. Relieve hose clamp and remove hose from drain tube at top and from grommet in body front hinge pillar.
4. Tape or tie new hose to lower end of old hose and pull new hose into position while removing old hose.
5. Secure new hose to drain tube outlet with hose clamp. Rotate ends of hose clamp to face out-board.

6. Insert lower end of hose through grommet in body front pillar.
7. Install headlining and all previously removed parts.
2. Relieve hose clamp and remove hose from drain tube at top.
3. Detach hose from clip at quarter inner panel ("57" styles) or wheelhouse pinchweld flange ("37" styles) (Fig. 8-48). Without disturbing upper end of hose, pull lower (free end) of hose rearward over wheelhouse on "37" styles or through access hole in quarter inner panel on "57" styles.
4. Tape or tie new hose to lower end of old hose

#### Removal and Installation - Rear

1. Remove quarter and back window trim moldings, quarter upper trim panel and detach headlining sufficiently to gain access to top of either drain hose (Fig. 8-48).

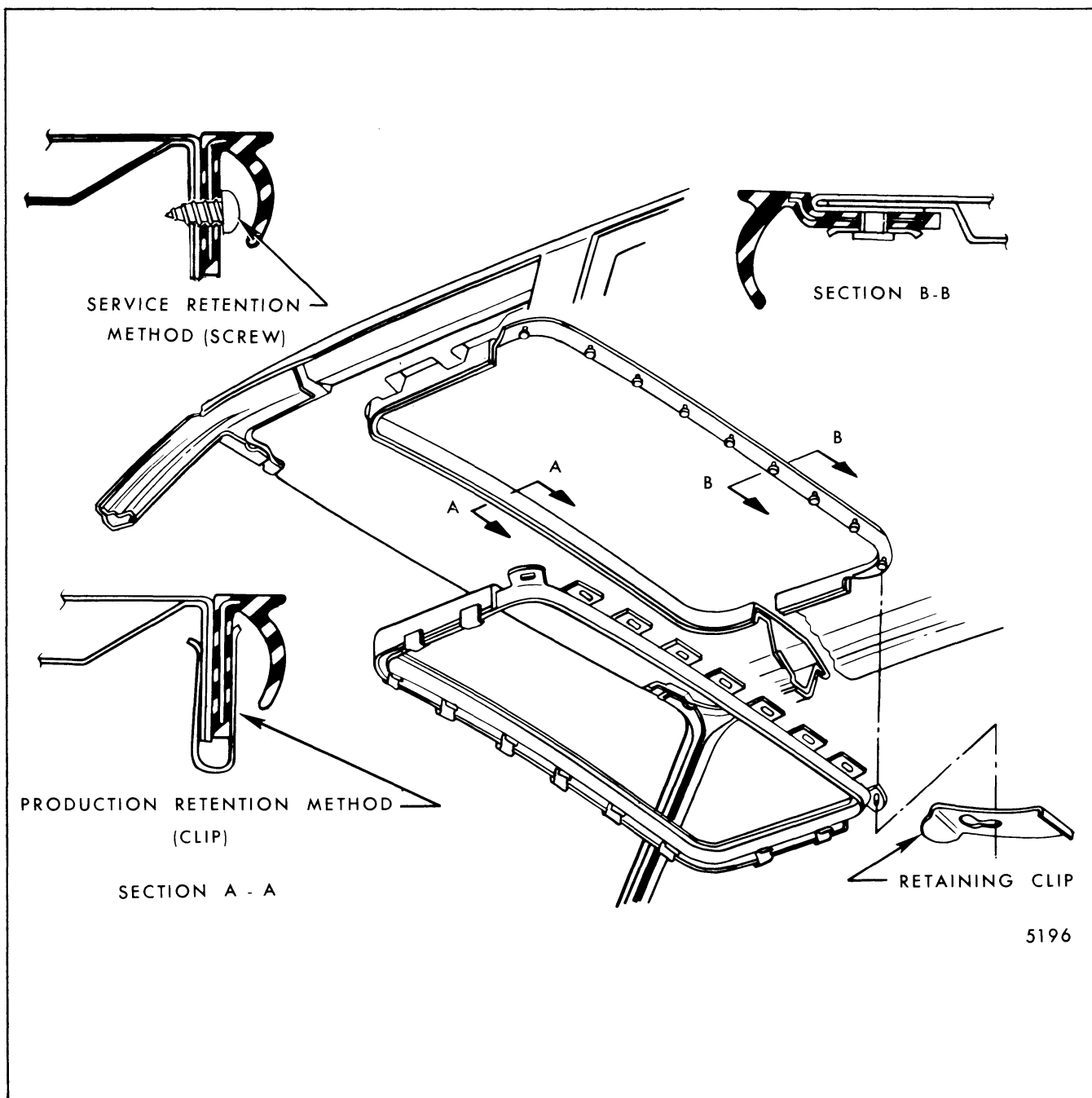


Fig. 8-49-Sunroof Opening Weatherstrip

and pull new hose into position while removing old hose.

5. Secure new hose to drain tube with hose clamp. Rotate ends of hose clamp to face outboard.
6. Route hose as specified and insert in clip at original location (Fig. 8-48).
7. Attach headlining and install all previously removed moldings.

## SUNROOF OPENING WEATHERSTRIP

The sunroof opening weatherstrip is fabricated of flock-coated rubber with ends vulcanized to form a continuous loop. The weatherstrip is retained at the front and sides of the roof opening by barbed clips, and by weld-stud retained clips at the rear of the opening (Fig. 8-49).

### Removal

1. Retract sunroof to full rearward position.
2. Remove clips retained by weld studs at rear of the opening (Fig. 8-49).

**NOTE:** Suitably protect sunroof panel against marring during this operation.

3. At front and sides of roof opening, lift weatherstrip inner lip, and with a hooked tool, spring the retaining clips out of engagement with weatherstrip and roof flange and remove weatherstrip (Fig. 8-49).

**NOTE:** The above operation mutilates the front and side retaining clips beyond use. They must be substituted with sheet metal screws upon weatherstrip installation.

### Installation

1. If original weatherstrip is being installed, as a bench operation, drill a 3/16" diameter hole in weatherstrip base at each of the original clip attaching locations (Fig. 8-49).
2. Index weatherstrip over weld studs along rear of roof opening and install retaining clips on studs.

**NOTE:** Replacement weatherstrip is pre-pierced at front and side attaching locations.

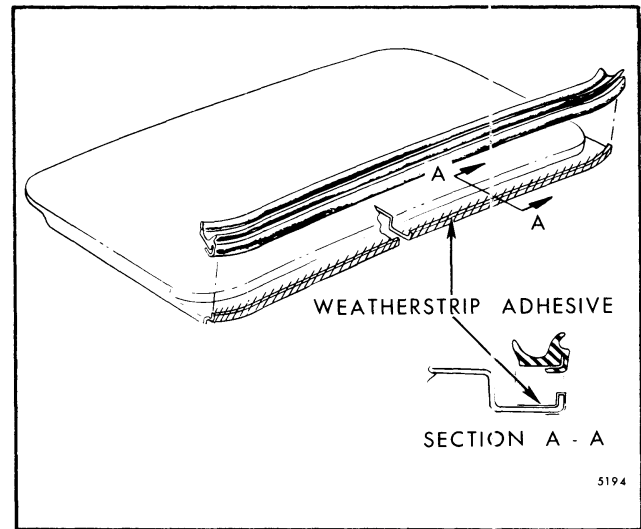


Fig. 8-50-Sunroof Panel Weatherstrip

3. Place weatherstrip in position at sides and front of opening. Using holes in the weatherstrip base as a fixture, drill a 1/8" hole through roof opening flange and drive a No. 6-1/2" pan head sheet metal screw at each attaching location. Work progressively from centerline to and around each side.

## SUNROOF PANEL WEATHERSTRIP

A sunroof panel weatherstrip is used solely along the rear edge and is retained by cement and engagement over the panel rear vertical flange (Fig. 8-50).

### Removal

1. Remove sunroof panel as previously described.
2. Break weatherstrip cement bond with a flat-bladed tool and remove weatherstrip.

### Installation

1. Clean surfaces with a suitable cement solvent.
2. Apply weatherstrip cement to both surfaces.
3. After cement becomes tacky, index and bond weatherstrip to panel.
4. Install sunroof panel.

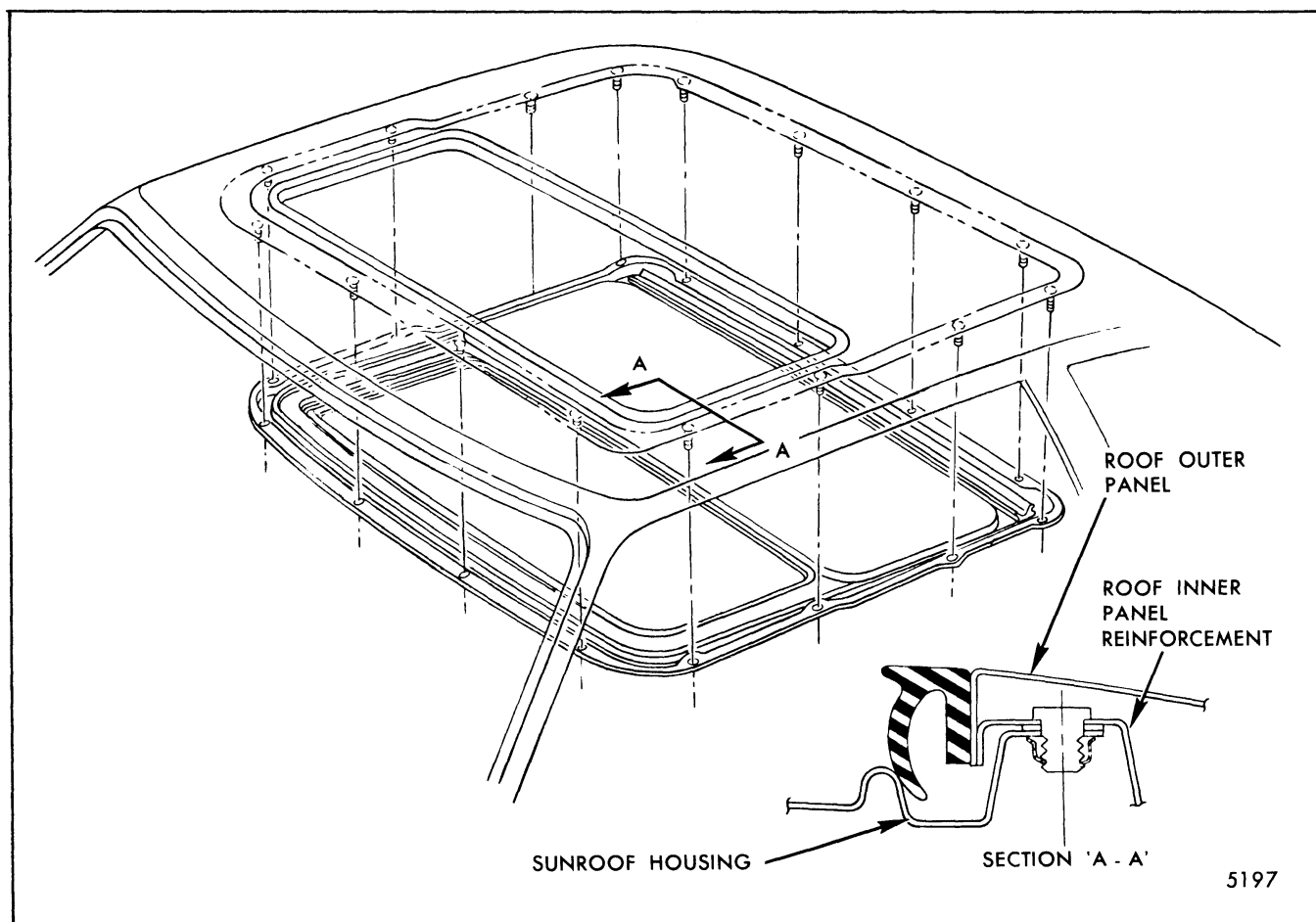


Fig. 8-51-Sunroof Module (Complete Installation)

## SUNROOF HOUSING ASSEMBLY

The sunroof housing, complete with all hardware except as specified below, may be removed as an assembly (Fig. 8-51).

### Removal

1. Retract the sunroof panel to half open position.
2. On manually operated sunroof, remove crank handle and handle escutcheon on power operated units remove control switch and winding gear access plug.
3. Remove headlining as outlined in headlining section of this manual.
4. Disconnect four drain hoses at the sunroof housing drain tubes (Fig. 8-48).
5. On power operated sunroof, disconnect motor electrical leads.

6. Support sunroof housing assembly and remove sixteen nuts that retain housing to roof inner panel (Fig. 8-51). Lower and remove sunroof housing.

### Installation

1. Raise sunroof panel and index with studs of adapter ring of roof inner panel.
2. While supporting housing in position, drive retaining nuts. Torque to 48-72 inch pounds.
3. Connect drain hoses to housing drain tubes at each corner. Rotate ends of hose clamps to face outboard.
4. Replace all trim and hardware previously removed.

## SUNROOF LUBRICATION

### Description

All mechanical components that have relative motion with other parts are lubricated during assembly.

If additional lubrication is required, the specified materials or their equivalents as stated here should be used.

Due to the proximity of sunroof hardware parts to soft trim components, observe the following recommendations during regular service:

1. During cable replacement, lubricate cables with No. 70 Lubriplate or equivalent.
2. It is not necessary to lubricate top surface of guide rail covers or guide rail lower channels.
3. Periodically clean off any dirt that may have accumulated on guide rail covers.

## FOLDING TOP - "B and E" Styles

### DESCRIPTION

"B and E" Convertible Styles feature an "inward" folding top. The convertible top involves a precise adjustment procedure which must be performed as outlined in this section.

Side roof rails are hinged at the front, center and rear. The hinging design enables the side roof rails to fold "inwardly" when the top is lowered. The roof cross bows, and trimstick stack to the rear of the side rails. The back window stacks under the roof rails and bows.

The inward folding top stacks to a flush position in the folding top compartment. The folding top well is shorter in length and provides full-width rear seat back comfort and leg room comparable to closed body styles.

Operation of the top is controlled by an electric switch. The top is powered by a reversible electric motor and two gear reduction units. One gear reduction unit, at the motor, operates the drive cables. Other gear reduction units are integral with the top actuator assemblies at each main hinge. Drive cables supply power to the actuators which, in turn, multiply the power to operate the top. During top operation, the solid-tempered glass back window is

controlled by a guide control link and spring at each lower corner. The inward folding top gutter of convertible top trim construction controls drainage of water at the rear belt rail.

The left side rail folds before the right rail upon stacking. The side rail folding sequence causes the front roof rail to be non-parallel to the ground during top operation. When the top is raised and not locked to the windshield header a non-parallel condition may exist between the front roof rail and the windshield header. This condition is considered normal, if a manual assistance not greater than 30 pounds is required to position the locating pin into the striker guide hole. The left side of top should always be located and locked to the windshield header first.

**CAUTION:** Before lowering the top, check the folding top compartment inside the car and in the rear compartment. Remove all luggage and parcels from the folding top compartment inside the car. Also, if necessary, clear away any luggage or miscellaneous parcels in the rear compartment which may have slid forward into the folding top compartment storage area. Failure to do so could result in breakage of the back window glass or damage to the folding top mechanism during operation of the top.

## FOLDING TOP TRIM

### FOLDING TOP COVER AND BACK CURTAIN ASSEMBLY

#### Removal

**NOTE:** Before removal operations are started, check and specifically note alignment condition of back curtain and top cover. Conditions, such as: wrinkles, draws, excess material, etc., can be corrected by adjusting trim material during assembly operations.

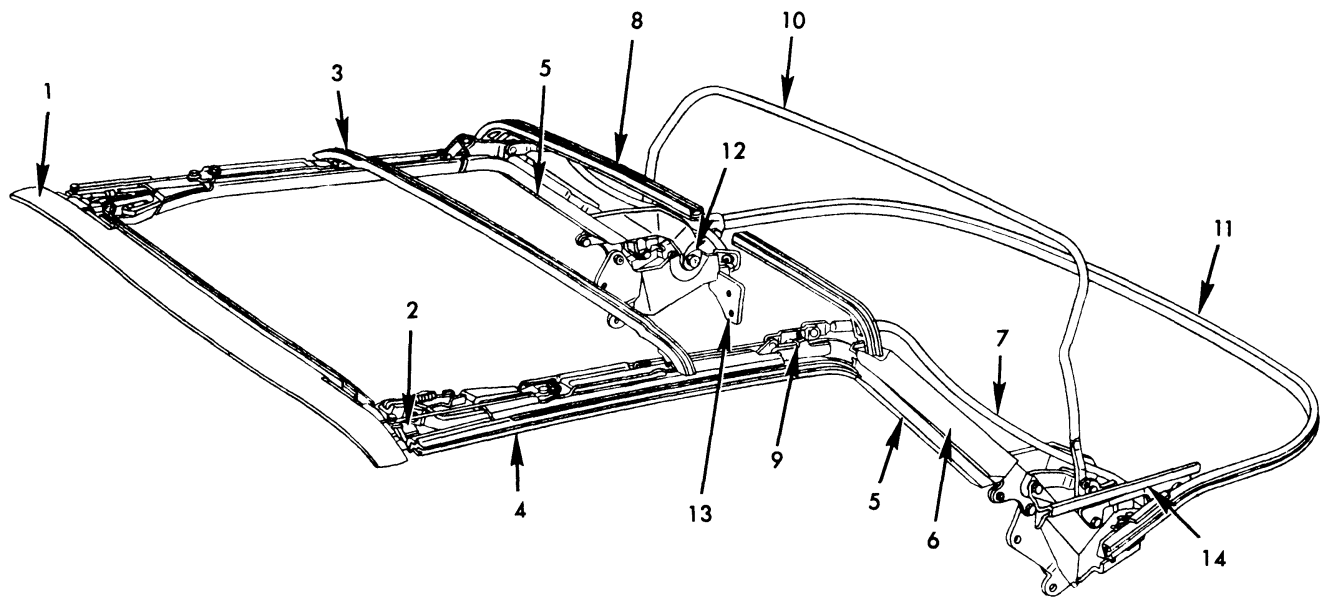
1. Apply protective covers to car as follows:

A. On rear deck section of car, particularly area adjacent to quarter belt finishing moldings, apply heavy padded cover to protect moldings and paint finish. Mask securely in place.

B. On interior trim, floor and hood, use conventional covers.

2. With top lowered, detach top cover at front roof rail as follows (Fig. 8-53):

A. Remove front roof rail front weatherstrip.



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Fig. 8-52-Inward Folding Top Hardware Components

- |                         |                        |                          |
|-------------------------|------------------------|--------------------------|
| 1. Front Roof Rail      | 7. Side Roof Rear      | 11. Rear Belt Rail       |
| 2. Front Roof Rail Lock | Control Link           | Trimstick                |
| 3. Front Roof Bow and   | 8. Center Bow Assembly | 12. Folding Top Actuator |
| Link Assembly           | 9. Side Roof Rail Set  | Assembly                 |
| 4. Side Roof Front Rail | Screw                  | 13. Main Hinge           |
| 5. Side Roof Inner Rear | 10. Rear Roof Bow and  | 14. Folding Top Cover    |
| Rail                    | Link Assembly          | Pressure Bar             |
| 6. Side Roof Outer Rear |                        |                          |
| Rail                    |                        |                          |

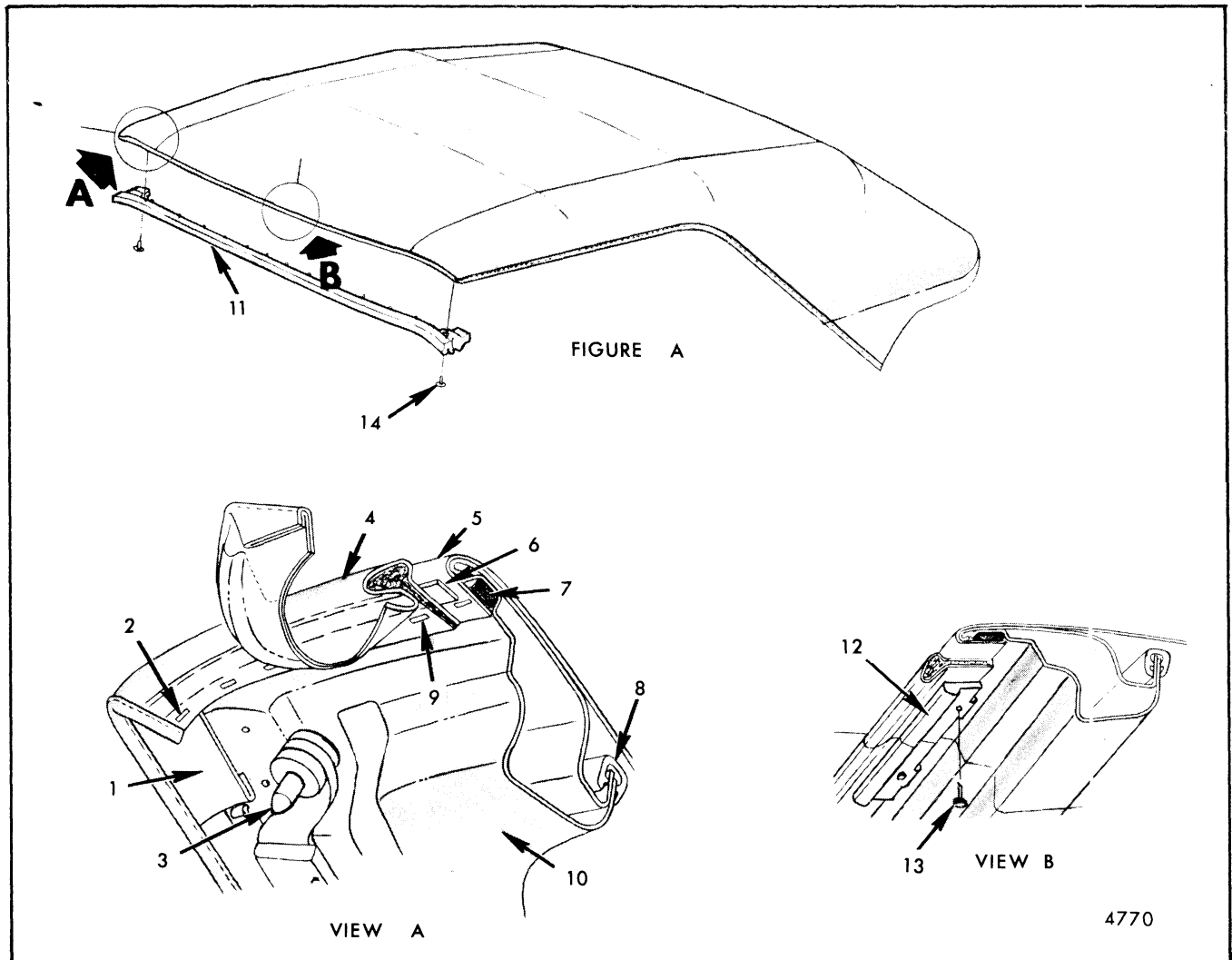


Fig. 8-53-Front Roof Rail Parts Attachment

- |                                       |   |   |
|---------------------------------------|---|---|
| 1. Top Cover Corner Retainer          | 6. Front Weatherstrip to Top Cover Sealer | 11. Front Roof Rail Rear Weatherstrip           |
| 2. Staple Securing Top Cover          | 7. Tacking Strip                          | 12. Front Roof Rail to Windshield Header Spacer |
| 3. Front Roof Rail Locating Pin       | 8. Pinchweld Finishing Lace               | 13. Spacer Attaching Nail                       |
| 4. Front Roof Rail Front Weatherstrip | 9. Staple Securing Front Weatherstrip     | 14. Attaching Screw                             |
| 5. Top Cover                          | 10. Front Roof Rail                       |   |

B. Detach front roof rail rear weatherstrip at outer ends.

C. Detach top cover from front roof rail.

D. With top a short distance above windshield header, remove attaching screws, loosen metal tabs and detach hold-down cables at front (Fig. 8-54).

E. Detach hold-down cables from front bow and side roof rail rear (View "U" and "W", Fig. 8-54).

3. With top raised, detach guide control links from lower corners of back window, slip compartment bag over links and lay links on floor.

**WARNING:** CONTROL LINKS ARE UNDER SPRING TENSION AND MUST BE DETACHED WITH CARE TO AVOID PERSONAL INJURY AND/OR DAMAGE TO TRIM MATERIAL. FOR DETACHMENT INSTRUCTIONS SEE: "BACK WINDOW GUIDE CONTROL LINK SPRING REMOVAL AND INSTALLATION" (FIG. 8-68).



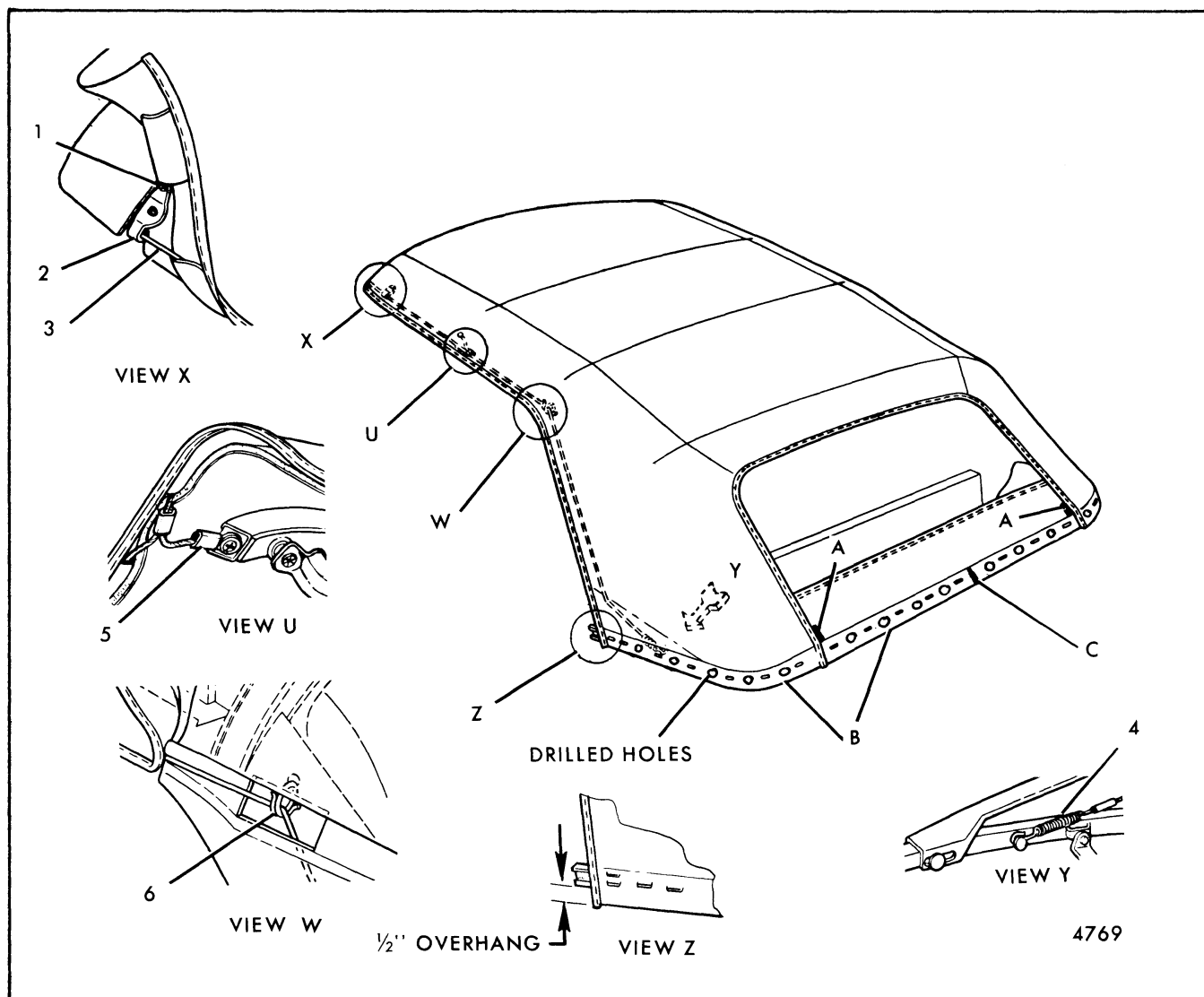


Fig. 8-54-Hold-Down Cable Attachment and Convertible Top Reference Marking

- |  |   |
|--|---|
| 1. Front Attaching Screw   | with Hook Downward to Hold Spring Flat Against Trimstick) |
| 2. Hold-Down Cable Front Bracket                                       |   |
| 3. Hold-Down Cable   | 5. Hold-Down Cable Loop Retainer                          |
| 4. Hold-Down Cable Rear Spring (Left Side is Shown, Connect Right Side | 6. Folding Top Material Hold-Down Cable Retainer          |

4. With top lowered half-way, remove side roof rail rear weatherstrips. Mark reference locations of quarter retainers on side rails (Fig. 8-56) and detach cemented retainers from side rails.

5. Prepare center bow, rear trimstick and rear gutter assemblies for raising above body belt line as follows:

A. With front roof rail several inches above windshield header, remove lower rear bolt

(View "B", Fig. 8-57) securing trimstick to main hinge on each side. Bolt is removable toward inside of body. Welded anchor nut remains on trimstick.

B. In rear compartment, detach gutter retaining rod from attaching clips (Fig. 8-63). Use care to prevent puncturing or tearing gutter during detachment. A total of five attaching clips are located as follows: one on each side of rear compartment lid hinges and one at

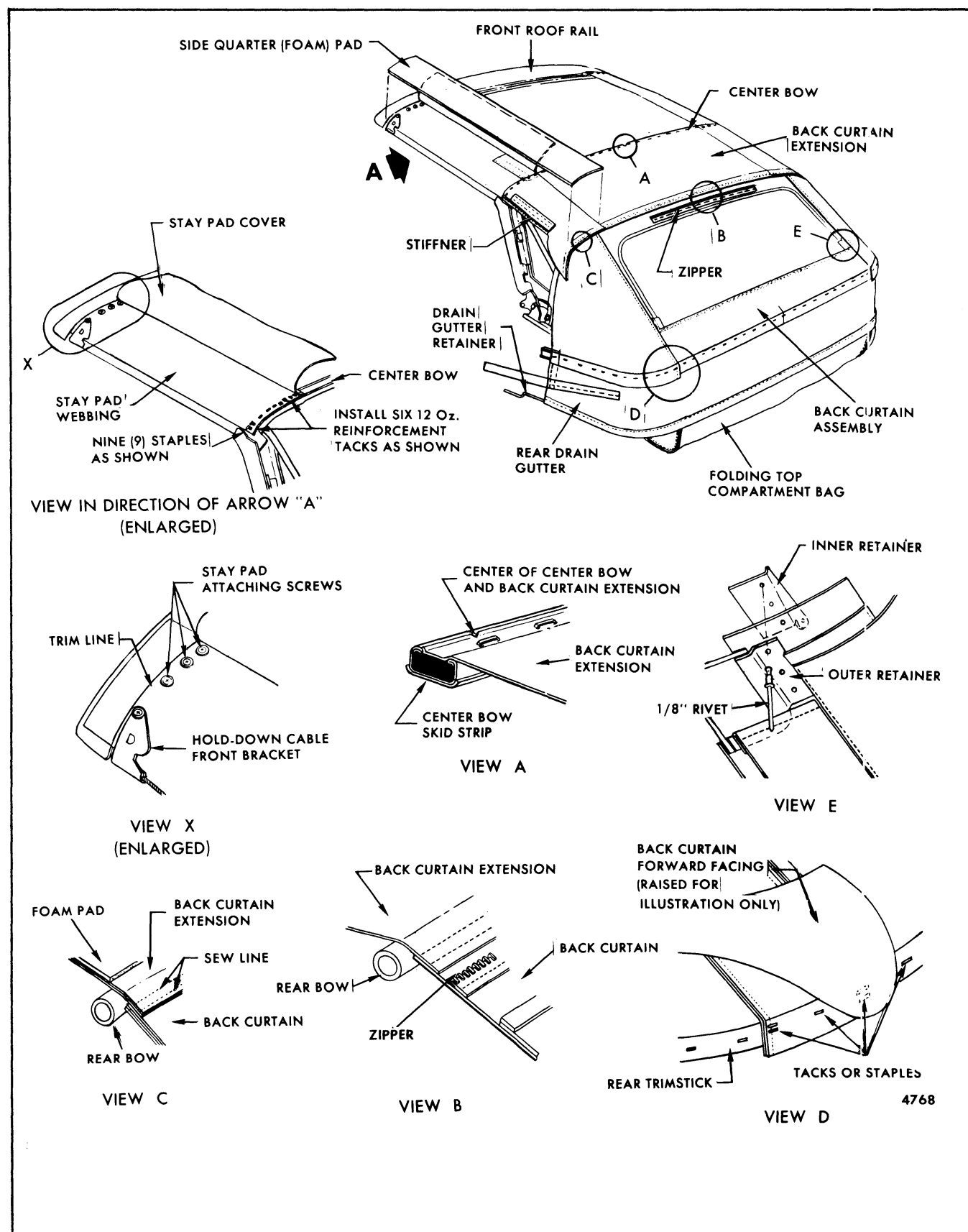


Fig. 8-55-Back Curtain Assembly Attachment and Reference Marking

rear center. Then detach each end of retaining rod from body by moving rod rearward.

- C. With top lowered about half-way, remove front bolt and nut on each side (View "A", Fig. 8-57) securing center bow assembly to main hinge. Bolt enters through bushing and threads into main hinge. Bolt is then secured with lock nut. Bushing is retained in outer rail and contacts main hinge.

**NOTE:** In some cases, access to bolt may require some deflection of quarter upper rear sealing strip which is metal reinforced and can be restored to proper alignment. Avoid losing nut or bolt behind trim by blocking adjacent openings with shop towels.

6. Lift rear trimstick, center bow and gutter assemblies as follows:

- A. On one side of body, spring trimstick, center bow and gutter assembly inward. Check and position gutter retaining rod and trimstick to assure that they are clear for removal.

- B. Lift trimstick, center bow and gutter assembly forward and upward as shown in Figure 8-58.

- C. Duplicate lifting operation on opposite side of body, and position center bow, rear trimstick and gutter assembly on protected rear deck of car (Fig. 8-59).

7. With suitable marking tool, such as pointed felt tipped pen, or tailor's chalk, accurately mark reference lines on top trim material as follows:

- A. Vertical edge references of top cover on back curtain at trimstick (Item "A", Fig. 8-54).

- B. Mark bottom of trimstick reference on top cover and back curtain in window opening (Item "B", Fig. 4769).

- C. Center mark on trimstick and on back curtain (Item "C", Fig. 8-54).

- D. Reference mark at two (2) inch intervals along center line of trimstick on top cover and back curtain (Figs. 8-54 and 8-60). Remove staple or tack which may be at reference location.

- E. Using a quarter (1/4) inch drill bit, drill hole at each reference location. Drill hole only

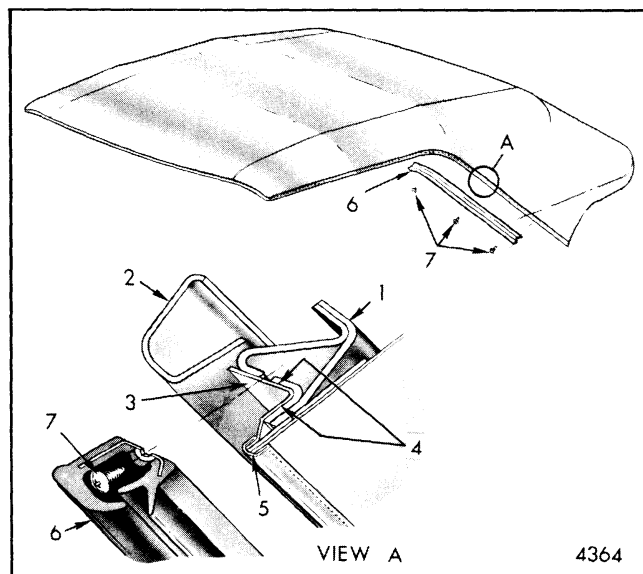


Fig. 8-56-Side Roof Rail Rear Weatherstrip and Quarter Retainer Attachment

- |   |   |
|---|---|
| 1. Side Roof Outer Rear Rail              | 4. Cementing Surfaces for Retainer            |
| 2. Side Roof Inner Rear Rail              | 5. Retainer Seam Aligned With Outer Rear Rail |
| 3. Top Cover Rear Quarter Retainer (Flap) | 6. Side Roof Rail Rear Weatherstrip           |
|   | 7. Attaching Screw                            |

partially into trimstick. **DO NOT** drill completely through trimstick.

8. With staple removing tool, such as narrow screwdriver, detach both sides of top cover from trimstick. Pull top cover upward, and complete marking lower edge reference of trimstick on back curtain (Fig. 8-60).

9. Pull top cover upward and detach hold-down cable rear spring from each side of trimstick (View "Y", Fig. 8-54).

10. Remove hold-down cables from listing pockets by pulling springs through listing pockets.

11. Turn front of top cover rearward for access to front listing. Detach front listing from front roof bow (View "A", Fig. 8-61).

12. Unzip top cover from back curtain (View "C", Fig. 8-61).

13. Turn rear of top cover forward for access to rear listing. Detach rear listing from center bow (View "B", Fig. 8-61) and remove top cover.

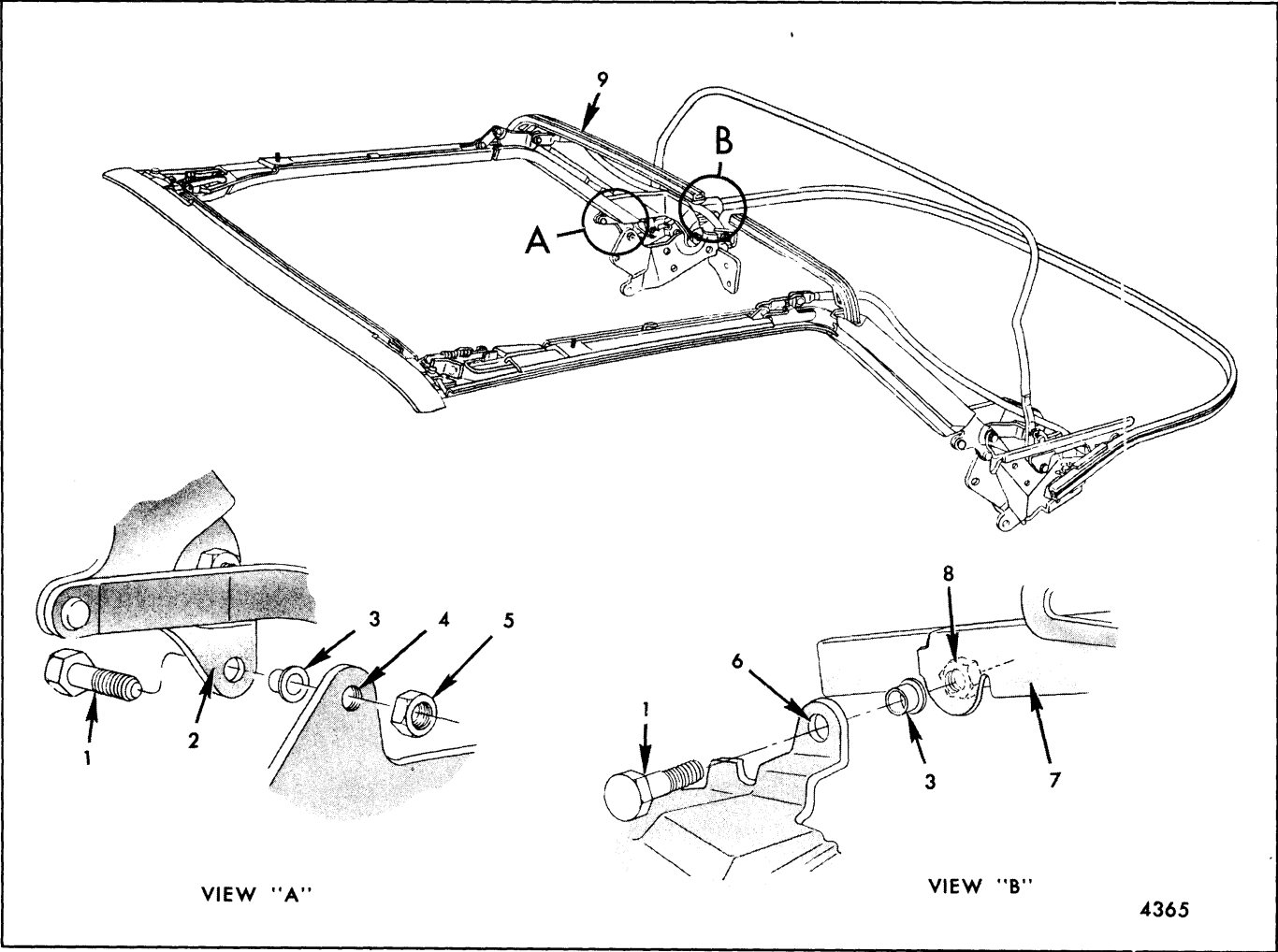


Fig. 8-57-Center Bow Assembly and Rear Trimstick Attachment

- |  |                                |   |
|--|--------------------------------|---|
| 1. Attaching Bolt  | 3. Bushing                     | 7. Rear Trimstick (Part of Center Bow Assembly) |
| 2. Side Roof Outer Rear Rail (Part of Center Bow Assembly) | 4. Threaded Hole in Main Hinge | 8. Anchor Nut (Part of Trimstick)               |
|  | 5. Lock Nut                    | 9. Center Bow                                   |
|  | 6. Main Hinge                  |   |

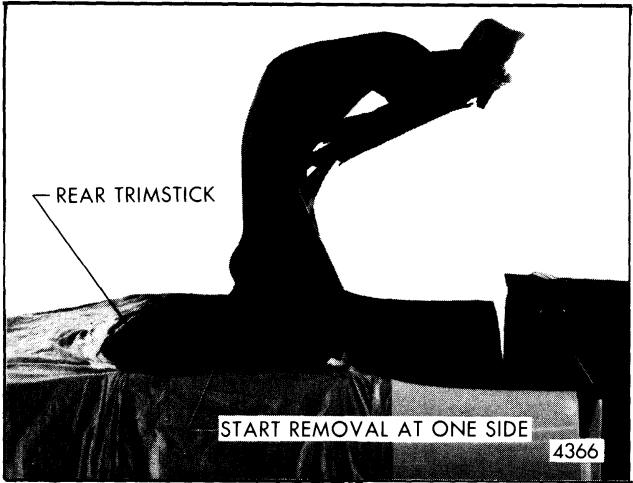


Fig. 8-58-Lifting Rear Trimstick From Body

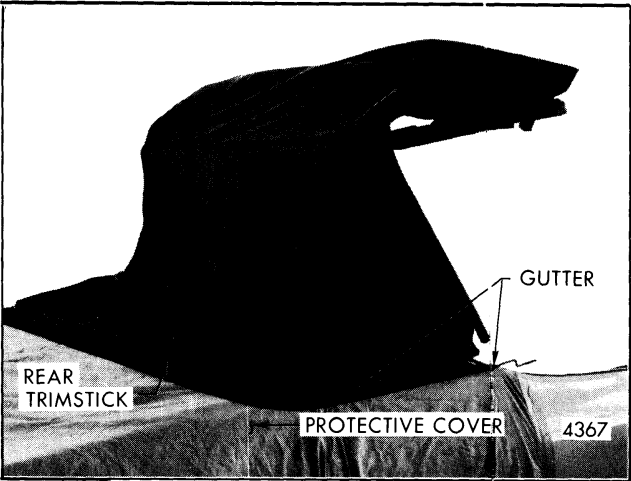


Fig. 8-59-Rear Trimstick on Rear Deck of Car

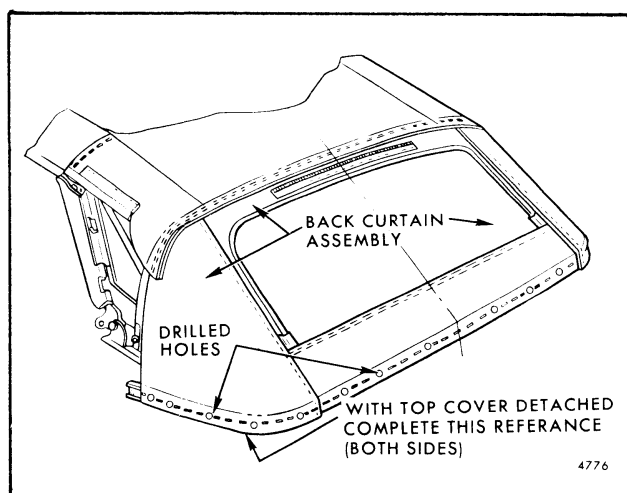


Fig. 8-60-Completing Reference Marking On Back Curtain

14. Detach and remove back curtain assembly as follows:

A. Detach side quarter foam pad from back curtain extension up to center bow (Fig. 8-55). If pad(s) are damaged during removal, they

should be replaced with equivalent soft, foam rubber material. Use sharp blade, like razor, and carefully cut cemented bond while gently lifting foam pad.

B. Mark center on back curtain and on adjacent folding top parts as follows:

1. At front: On back curtain extension and on center roof bow (View "A", Fig. 8-55).
2. At rear: On back curtain lower inner valance and on gutter material at trimstick.

C. Detach back curtain from rear trimstick. Note how folded material is secured below back window sides (View "D", Fig. 8-55).

D. Detach back curtain extension from center bow and remove back curtain assembly.

### Installation

1. Since original top cover and back curtain are being replaced, transfer reference marking from

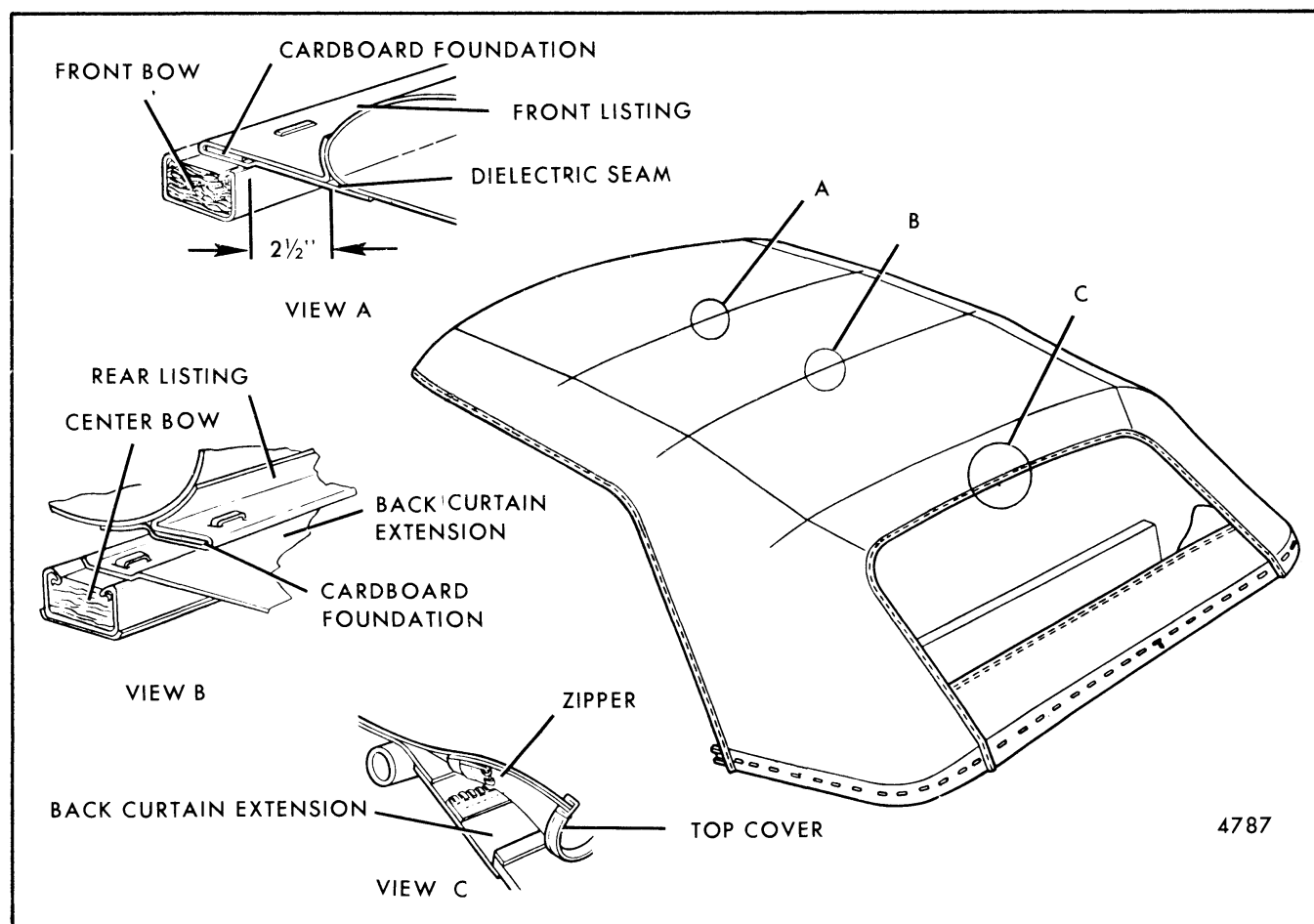


Fig. 8-61-Top Cover Attachment At Front And Center Roof Bows

original back curtain and top cover to replacement parts as follows (Figs. 8-54 and 8-60):

- A. Using scissors or equivalent sharp cutting tool, remove excess overhang material from top cover and back curtain at reference "B", Figure 8-54.
  - B. Lay new back curtain flat on clean surface with inside face down. Position original back curtain over new one matching corners of back window openings. Carefully position trim material flat in all directions.
  - C. With back window openings in alignment, accurately transfer trimstick reference to bottom of new back curtain by following along lower cut valance of original back curtain. Use a suitably pointed and legible marking pencil or tailor's chalk (Item "B", Fig. 8-54 and Fig. 8-60).
  - D. Transfer center reference mark from original back curtain to new curtain at front (on extension) (View "A", Fig. 8-55) and at rear (on valance) (Item "C", Fig. 8-54).
  - E. Transfer top cover vertical edge reference from original back curtain to new curtain (Item "A", Fig. 8-54).
  - F. Using drilled holes on original back curtain as reference punch holes in new back curtain.
  - G. Place new top cover flat on clean surface with inner surface down. Position original top cover over new cover. Carefully align top cover sides, back window opening upper corners, and rear quarter upper corners.
  - H. With both covers in alignment, transfer trimstick references, right and left, to bottom of new top cover by marking along cut rear edges (Item "B", Fig. 8-54).
  - I. Using drilled holes on original top cover as reference punch holes in new top cover.
2. Install back curtain assembly as follows:
    - A. Position center of new back curtain extension on center of center bow. Front edge of extension should be flush with front rib of center bow. Staple or tack extension to center bow. Start at center, keep trim material flat, and space tacks or staples about two (2) inches apart (View "A", Fig. 8-55).
    - B. With aid of helper, align rear center of back curtain with center of trimstick. At same

time, carefully align horizontal reference mark on back curtain with lower edge of trimstick. Also align punched holes in back curtain with drilled holes in trimstick.

**NOTE:** Original back curtains are stretched to a degree upon installation. Replacement back curtains are not stretched. During this operation, allow for uniform stretch in material for proper final appearance.

- C. Working from center, staple or tack back curtain to trimstick. Maintain alignment of reference locations at trimstick, and keep material flat to trimstick between fasteners.
  - D. Fold back each side of curtain, shown in View "D", Figure 8-55, and install three staples or tacks at this location.
  - E. Space staples or tacks about two inches apart (about 40 tacks or staples). Avoid excessive stretching of material (Fig. 8-55).
  - F. Allow 1/2 inch of back curtain to overhang rear trimstick. Using scissors, cut off excess material beyond 1/2 inch overhang (View "Z", Fig. 8-54).
3. Cement original or replacement side quarter (foam) pad (Fig. 8-55) between center bow and rear bow on each side. If pad(s) from center to rear bow were damaged upon removal, replace them with equivalent foam rubber material.
  4. Fold replacement top cover assembly in half as shown in Figure 8-62. Determine precise center-

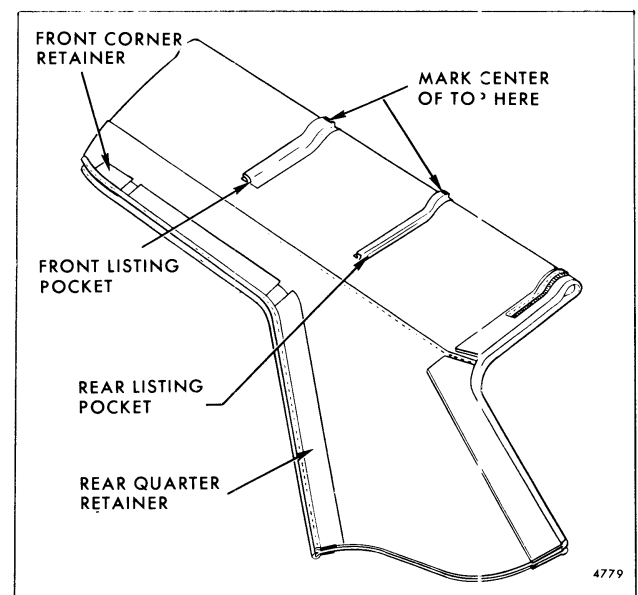


Fig. 8-62-Determining Center of Top Cover

line of top cover and carefully mark center of top cover on listings for front bow and center bow.

5. Transfer cardboard foundations from original top cover, or install replacement foundations in front and center bow listing pockets as shown (View "A" and "B", Fig. 8-61).
6. Insert hold-down cables in top cover. Use a length of welding rod to facilitate insertion (Fig. 8-54).
7. Position center of top cover rear listing on center bow and staple or tack in place. Space fasteners about (2) inches apart (View "B", Fig. 8-61).
8. Zip top cover to back curtain (View "C", Fig. 8-61).
9. Attach hold-down cable rear spring to each side of trimstick (View "Y", Fig. 8-54).
10. With aid of helper, install top cover as follows:

A. Align top cover at rear vertical reference marks and at trimstick horizontal reference (Items "A" and "B", Fig. 8-54). Also align punched holes in top cover with holes in back curtain and trimstick. With helper holding trim in aligned position, double tack or staple at this position using 12 ounce tacks or staples or equivalent.

**NOTE:** Original top covers are stretched to a degree upon installation. Replacement top covers are not stretched. During installation, allow for uniform stretch in new cover for proper final appearance.

- B. Apply trim cement to lower area of side roof rear rail and to top cover quarter retainer (flap). Center top (laterally) by aligning horizontal reference on each side at trimstick. Secure quarter retainer (flap) at bottom. Also, double staple or tack top cover at front of trimstick (Fig. 8-56 and View "Z", Fig. 8-54) using 12 ounce tacks or equivalent staples.
- C. Align top cover horizontal reference at center (in accordance with Steps A and B above) and staple or tack in place. Work left and right from center. Keep material in alignment and flat. Avoid stretching. Space staples or tacks about two (2) inches apart.
- D. Trim off excess material beyond 1/2 inch over-hang (Fig. 8-54).

**NOTE:** If diagnosis prior to top cover removal revealed particular conditions (Such as: Loose material, etc.) the conditions can be corrected by adjusting top cover on trimstick in Steps A, B and C above.

11. Position rear trimstick, center bow and gutter assembly into body in reverse order of removal. With top half-lowered, start one end of trimstick and gutter into body, then position opposite end into body.
12. Secure trimstick, center bow and gutter assembly to body as follows:
  - A. Manually raise top to up position. Secure back window guide control links. For attachment of control links see: "Back Window Guide Control Link Removal and Installation" (Fig. 8-68).
  - B. Raise top several inches above windshield header. Install bushing in main hinge, align trimstick to main hinge attaching holes and install trimstick attaching bolts (View "B", Fig. 8-57). Use care to avoid dropping bolt. To avoid losing bolt, block openings at wheelhouse with several shop towels.
  - C. Lower top half-way. With bushing properly positioned in each outer rail, install attaching bolts (View "A", Fig. 8-57) securing outer rail to main hinge. Each bolt threads into hinge and is secured with lock nut.
  - D. Secure rear gutter retaining rod to clips on body as shown in Figure 8-63.
13. Secure top cover front listing to front roof bow as follows (Fig. 8-61):
  - A. Check alignment of cardboard foundation at front listing pocket as shown in illustration. Foundation must be at front of listing pocket as shown.
  - B. Center listing and foundation on center of front bow.
  - C. Secure listing in place with staples or tacks spaced about two (2) inches apart. Distance from end of foundation to center of dielectric seam should be about 2-1/2 inches as shown in View "A", Figure 8-61.
14. With top several inches off windshield header, position and secure hold-down cables at front (Fig. 8-54). Position bracket by inserting tab and secure bracket with screw, then secure metal tab. Also attach hold-down cable to front bow and

side roof rail rear (View "U" and "W", Fig. 8-54).

15. Align and secure top cover at front roof rail as follows:

- A. Raise top and lock to windshield header.
- B. With aid of helper, pull top cover forward and down to remove wrinkles and irregularities. Mark reference of front edge of front roof rail on top cover.
- C. Unlock front roof rail and apply cement to underside of front roof rail and top cover. This includes tacking strip and both corners (Fig. 8-53).

**NOTE:** For best results of top installation and appearance, Step 15D should be done in conjunction with Step 16 before securing either permanently.

- D. Secure top cover to front roof rail according to reference marks above, and check appearance of top cover by locking top to windshield header. Adjust top cover by drawing material forward and/or laterally as required for proper alignment and appearance, and secure with cement. Front corner retainers (flaps) secure only to front roof rail.
16. With top locked to windshield header, cement, align and secure upper areas of quarter retainers (flaps) to side roof outer rear rails. Re-check alignment of top cover and align quarter retainer seams with edges of side roof rear rails. Remove all fullness from rear of top cover (Fig. 8-56). A forward draw on cover outer sides will aid this operation. Align quarter retainers to each rear rail and cement securely in place. Top cover binding at quarter retainers should not curl away from rear rail.
  17. Lower top and secure top cover to front roof rail trimstick with staples or tacks spaced about two inches apart. Remove excess top material along rear of trimstick.
  18. Using weatherstrip adhesive at outer ends, position and secure rear weatherstrip on front roof rail. Use outer attaching screw holes for locating purposes (Fig. 8-53).
  19. Position, secure and seal front roof rail front weatherstrip (Fig. 8-53). Front weatherstrip must be properly positioned and sealed as shown in illustration.
  20. Install and align side roof rail rear weatherstrips.

Adjust rear weatherstrips forward for butt fit when top is locked at windshield header. After tightening upper two screws, lower top part way to tighten lower screw.

**NOTE:** Side roof rail front weatherstrips are not designed to be adjusted "fore or aft". For improved contact at upper front corners, reposition windshield pillar weatherstrips upward.

21. Remove all protective covers and clean up.

## FOLDING TOP COVER (LESS BACK CURTAIN)

### Removal

**NOTE:** Before removal operations are started, check and specifically note alignment of top cover. Conditions, such as: wrinkles, draws, excess material, etc., can be corrected by adjusting trim material during assembly operations.

1. Apply protective covers to car as follows:
  - A. On rear deck section of car, particularly area adjacent to quarter belt finishing moldings, apply heavy padded cover to protect moldings and paint finish. Mask securely in place.
  - B. On interior trim, floor and hood, use conventional covers.
2. With top lowered, detach top cover at front roof rail as follows (Fig. 8-53):
  - A. Remove front roof rail front weatherstrip.
  - B. Detach front roof rail rear weatherstrip at outer ends.
  - C. Detach top cover from front roof rail (Fig. 8-53).
  - D. With top a short distance above windshield header, remove attaching screws, unbend metal tabs, and detach hold-down cables at front (Fig. 8-54).
  - E. Detach hold-down cable from front bow and side roof rail rear (View "U" and "W", Fig. 8-54).

**WARNING:** CONTROL LINKS ARE UNDER SPRING TENSION AND MUST BE DETACHED WITH CARE TO AVOID PERSONAL INJURY AND/OR DAMAGE TO



TRIM MATERIAL. FOR DETACHMENT INSTRUCTIONS SEE: "BACK WINDOW GUIDE CONTROL LINK AND SPRING REMOVAL AND INSTALLATION" (FIG. 8-68).

3. With top raised, detach guide control links from lower corners of back window, slip compartment bag over links and lay links on floor.
4. With top lowered half-way, remove side roof rail rear weatherstrips. Mark reference locations of quarter retainers on side rails (Fig. 8-56) and detach cemented retainers from side rails.
5. Detach center bow, rear trimstick and rear gutter assemblies for raising above body beltline as follows:
  - A. With front roof rail several inches above windshield header, remove lower rear bolt (Item "B", Fig. 8-57) securing trimstick to main hinge on each side. Bolt is removable toward inside of body. Welded anchor nut remains on trimstick.
  - B. In rear compartment, detach gutter retaining rod from attaching clips. Use care to prevent puncturing or tearing gutter during detachment. A total of five attaching clips are located as follows: One on each side of rear compartment lid hinges and one at rear center. Then detach each end of retaining rod from body by moving rod rearward.
  - C. With top lowered about half-way, remove front bolt and nut on each side (Item "A", Fig. 8-57) securing center bow assembly to main hinge. Bolt enters through bushing and threads into main hinge. Bolt is then secured with lock nut. Bushing is retained in outer rail and contacts main hinge.

**NOTE:** In some cases, access to bolt may require some deflection of quarter upper rear sealing strip which is metal reinforced and can be restored to proper alignment. Avoid losing nut or bolt behind trim by blocking adjacent openings with shop towels.

6. Lift rear trimstick, center bow and gutter assemblies from body as follows:
  - A. On one side of body, spring trimstick, center bow and gutter assembly inward. Check and position gutter retaining rod and trimstick to assure that they are clear for removal.
  - B. Lift trimstick, center bow and gutter assembly upward and forward.

C. Duplicate lifting operation on opposite side of body, and position center bow, rear trimstick and gutter assembly on protected rear deck of car.

7. With suitable marking tool, such as pointed felt tipped pen, or tailor's chalk, accurately mark reference lines on top trim material as follows:
  - A. Vertical edge references of top cover on back curtain at trimstick (Item "A", Fig. 8-54).
  - B. Lower edge of trimstick on top cover. Press on trim material to determine accurate position of trimstick before marking (Item "B", Fig. 8-54).
  - C. Reference mark at two (2) inch intervals along centerline of trimstick on top cover. Remove staple or tack, which may be at reference location.
  - D. Using a quarter (1/4) inch drill bit, drill hole at each reference location (Fig. 8-54).
8. With staple removing tool, such as narrow screwdriver, detach both sides of top cover from trimstick.
9. Pull top cover upward and detach hold-down cable rear spring from each side of trimstick (View "Y", Fig. 8-54).
10. Remove hold-down cables from listing pockets by pulling springs through listing pockets.
11. Unzip top cover from back cover (View "C", Fig. 8-61).
12. Turn rear of top cover forward for access to rear listing. Detach rear listing from center bow (View "B", Fig. 8-61).
13. Turn front of top cover rearward for access to front listing. Detach front listing from front roof bow (View "A", Fig. 8-61) and remove top cover.

## Installation

1. Since original top cover is being replaced, carefully and uniformly cut off bottom of original top cover along trimstick lower reference mark (Item "B", Fig. 8-54).
2. Place new top cover flat on clean surface with inner surface down. Position original top cover

over new one and reference mark as follows (Fig. 8-54).

- A. Carefully align top cover sides.
- B. Align back window opening upper corners.
- C. Align rear quarter upper corners.
- D. With both covers in alignment, transfer trimstick references, right and left, to bottom of new top cover by marking along cut bottom edges (Item "B", Fig. 8-54).
- E. Transfer locations of drilled holes along bottom.

- 3. Fold replacement top cover in half as shown in Figure 8-62. Determine precise centerline of top cover and carefully mark center of top cover on listings for front and center bows.
- 4. Transfer cardboard foundations from original top cover, or install replacement foundations in front and rear listing pockets as shown in Figure 8-61.
- 5. Insert hold-down cables in top cover. Use a length of welding rod to facilitate insertion (Fig. 8-54).
- 6. Position center of top cover rear listing on center bow and staple or tack in place. Space fasteners about two (2) inches apart (View "B", Fig. 8-61).
- 7. Zip top cover to back curtain.
- 8. With aid of helper, install top cover as follows:

- A. Align top cover at rear vertical reference mark and at trimstick horizontal reference. With helper holding trim in aligned position, double tack or staple at this location using 12 ounce tacks or equivalent staples.

**NOTE:** Original top covers are stretched to a degree upon installation. Replacement top covers are not stretched. During installation, allow for uniform stretch in new cover for proper final appearance.

- B. Apply trim cement to lower area of side roof rear rail and to top cover quarter retainer (flap). Center top (laterally) by aligning horizontal reference on each side at trimstick. Secure quarter retainer (flap) and seam at bottom. Also, double staple or tack top cover at front of trimstick (Fig. 8-56 and View "Z",

Fig. 8-54) using 12 ounce tacks or equivalent staples.

- C. Align top cover horizontal reference at center (in accordance with Steps A and B above) and staple or tack in place. Work forward and rearward from center. Keep material in alignment and flat. Space staples or tacks about two inches apart.
- D. Trim off excess material beyond 1/2 inch over-hang (Fig. 8-54).

**NOTE:** If diagnosis prior to top cover removal revealed particular conditions (Such as loose material, etc.) the conditions can be corrected by adjusting top cover on trimstick in Steps A, B and C above.

- 9. Position rear trimstick, center bow and gutter assembly into body in reverse order of removal. With top half lowered, start one end of trimstick and gutter into body, then position opposite end into body.
- 10. Secure trimstick, center bow and gutter assembly to body as follows:
  - A. Manually, raise top to up position. Secure back window guide control links. For attachment of control links, see: "Back Window Guide Control Link Removal and Installation" (Fig. 8-68).
  - B. Raise top several inches above windshield header. Install bushing in main hinge, align trimstick to main hinge attaching holes and install trimstick attaching bolts (View "B", Fig. 8-57). Use care to avoid dropping bolt. To avoid losing bolt, block openings at wheelhouse with several shop towels.
  - C. Lower top half-way. With bushing properly positioned in each outer rail, install attaching bolts (View "A", Fig. 8-57) securing outer rail to main hinge. Each bolt threads into hinge and is secured with lock nut.
  - D. Secure gutter retaining rod to five (5) clips on body (Fig. 8-63). Clips are located as follows: One on each side of rear compartment lid hinge and one at rear center.
- 11. Secure top cover front listing to front roof bow as follows (Fig. 8-61):
  - A. Check alignment of cardboard foundation at front listing pocket as shown in illustration. Foundation must be at front of listing pocket as shown.

- B. Center listing and foundation on center of front bow.
- C. Secure listing in place with staples or tacks spaced about two (2) inches apart. Distance from end of foundation to center of dielectric seam should be about 2-1/2 inches as shown in View "A", Figure 8-61.
12. With top several inches off windshield header, position and secure hold-down cables at front (Fig. 8-54). Position bracket by inserting tab and secure bracket with screw. Then secure hold-down cables to front bow and side roof rail rear (View "U" and "W", Fig. 8-54).
13. Align and secure top cover at front roof rail as follows:
  - A. Raise top and lock to windshield header.
  - B. With aid of helper, pull top cover forward and down to remove wrinkles and irregularities. Mark reference on front edge of front roof rail on top cover.
  - C. Unlock and raise front roof rail. Apply trim cement to attaching surfaces at front on top cover and on front roof rail. This includes surfaces of trimstick and both outer corners for retainers (Fig. 8-53).
 

**NOTE:** For best results of top installation and appearance, Step 13D should be done in conjunction with Step 14 before securing either permanently.
  - D. Secure top cover to front roof rail according to reference marks above, and check appearance of top cover by locking top to windshield header. Adjust top cover by drawing material forward and/or laterally as required for proper alignment and appearance and secure with cement. Front corner retainers (flaps) secure only to front roof rail.
14. With top locked to windshield header, cement, align and secure upper areas of quarter retainers (flaps) to side roof outer rear rails. Re-check alignment of top cover over center bow and align quarter retainer seams with edges of side roof rear rails. Remove all fullness from rear of top cover (Fig. 8-56). A forward draw on cover outer sides will aid this operation. Align quarter retainers to each rear rail and cement securely in place. Top cover binding at quarter retainers should not curl away from rear rail.
15. Lower top and secure top cover to front roof rail trimstick with staples or tacks spaced about two

inches apart. Remove excess top material along rear of trimstick.

16. Using weatherstrip adhesive at outer ends, position and secure front roof rail rear weatherstrip. Use outer attaching screw holes for locating purposes (Fig. 8-53).
17. Position, secure and seal front roof rail front weatherstrip (Fig. 8-53). Front weatherstrip must be properly positioned and sealed as shown in illustration.
18. Install and align side roof rail rear weatherstrips. Adjust rear weatherstrips forward for butt fit when top is locked at windshield header. After tightening upper one or two screws, lower top part way to tighten lower screw.

**NOTE:** The side roof rail front weatherstrips are not designed to be adjusted "fore or aft". For improved contact at upper front corners, reposition windshield pillar weatherstrip upward.

19. Remove protective covers, shop towels, if used, and clean up.

## BACK CURTAIN ASSEMBLY (LESS TOP COVER)

### Removal

**NOTE:** Before removal operations are started, check and specifically note alignment condition of back curtain. Conditions, such as: wrinkles, draws, excess material, etc., can be corrected by adjusting trim material during assembly operations.

1. Apply protective covers to car as follows:
  - A. On rear deck section of car, particularly area adjacent to quarter belt finishing moldings, apply heavy padded cover to protect moldings and paint finish. Mask securely in place.
  - B. On interior trim and floor, use conventional covers.

**WARNING:** CONTROL LINKS ARE UNDER SPRING TENSION AND MUST BE DETACHED WITH CARE TO AVOID PERSONAL INJURY AND/OR DAMAGE TO TRIM MATERIAL. FOR DETACHMENT INSTRUCTIONS SEE: "BACK WINDOW GUIDE CONTROL LINK AND SPRING REMOVAL AND INSTALLATION" (FIG. 8-68).

2. With top raised, detach guide control links from lower corners of back window, slip compartment bag over links and lay links on floor.
3. With top lowered half-way, remove side roof rail rear weatherstrips. Mark reference locations of quarter retainers on side rails (Fig. 8-56) and detach cemented retainers from side rails.
4. Prepare center bow, rear trimstick and rear gutter assemblies for lifting above body beltline as follows:
  - A. With front roof rail several inches above windshield header, remove lower rear bolt (View "B", Fig. 8-57) securing trimstick to main hinge on each side. Bolt is removable toward inside of body. Welded anchor nut remains on trimstick.
  - B. In rear compartment, detach gutter retaining rod from attaching clips. Use care to prevent puncturing or tearing gutter during detachment. A total of five attaching clips are located as follows: One on each side of rear compartment lid hinges and one at rear center. Then detach each end of retaining rod from body by moving rod rearward.
  - C. With top lowered about half-way, remove front bolt and nut on each side (View "A", Fig. 8-57) securing center bow assembly to main hinge. Bolt enters through bushing and threads into main hinge. Bolt is then secured with lock nut. Bushing is retained in outer rail and contacts main hinge.

**NOTE:** In some cases, access to bolt may require some deflection of quarter upper rear sealing strip which is metal reinforced and can be restored to proper alignment. Avoid losing nut or bolt behind trim by blocking adjacent openings with shop towels.
5. Lift rear trimstick center bow, and gutter assemblies from body as follows:
  - A. On one side of body, spring trimstick, center bow and gutter assembly inward. Check and position gutter retaining rod and trimstick to assure that they are clear for removal.
  - B. Lift trimstick, center bow and gutter assembly forward and upward.
  - C. Duplicate lifting operation on opposite side of body and position center bow, rear trimstick and gutter assembly on protected rear deck of car.
6. With suitable marking tool, such as pointed felt tipped pen, or tailor's chalk, accurately mark reference lines on top trim material as follows:
  - A. Vertical edge references of top cover on back curtain at trimstick (Item "A" Fig. 8-54).
  - B. Lower edge of trimstick on top cover. Press on trim material to determine accurate position of trimstick before marking (Item "B", Fig. 8-54).
  - C. Center mark on trimstick and on back curtain (Item "C", Fig. 8-54). If none is present, make one.
  - D. Reference mark at two (2) inch intervals along center of trimstick on top cover and back curtain. Remove staple or tack, which may be present at reference location.
  - E. Using a quarter (1/4) inch drill bit, drill hole at each reference location.
7. With staple removing tool, such as narrow screwdriver, detach both sides of top cover from trimstick. Pull top cover upward, and complete marking lower edge reference of trimstick on back curtain (Fig. 8-60).
8. Unzip back curtain from top cover (View "C", Fig. 8-61).
9. Lift top cover upward and detach hold-down cable rear spring from each side of trimstick (Fig. 8-54) also detach hold down cable from side roof rail rear (View "W", Fig. 8-54).
10. Detach top cover rear listing from center bow. Turn rear of top cover forward for access to rear listing (View "B", Fig. 8-61).
11. Detach and remove back curtain assembly as follows:
  - A. Detach side quarter foam pad from back curtain extension up to center bow (Fig. 8-55). If pad(s) are damaged during removal, replace them with equivalent soft, foam rubber material. Use sharp blade, like razor, and carefully cut cemented bond while gently lifting foam pad.
  - B. Mark center on back curtain and on adjacent parts as follows:
    1. At top: On back curtain extension and on center roof bow (View "A", Fig. 8-55).

2. At bottom: On back curtain lower inner valance and on gutter material at trimstick (View "C", Fig. 8-54).
- C. Detach back curtain from rear trimstick. Note how folded material is secured below back window sides (View "D", Fig. 8-55).
- D. Detach back curtain extension from center bow and remove back curtain assembly.

## Installation

1. Since original back curtain is being replaced, carefully and uniformly cut away bottom of original back curtain along rear trimstick lower reference marks (Figs. 8-54 and 8-60).
  2. Transfer reference markings from original back curtain to replacement back curtain as follows:
    - A. Lay new back curtain flat on clean surface with inside face down. Position original back curtain over new one matching corners of back window openings. Carefully position trim material flat in all directions.
    - B. With back window openings in alignment, accurately transfer trimstick reference to bottom of new back curtain by following along lower cut valance of original back curtain. Use a suitably pointed and legible marking pencil or tailor's chalk. (Item "B", Fig. 8-54 and Fig. 8-60).
    - C. Transfer center reference mark from original back curtain to new one at top (on extension) and at bottom (on valance) (Item "C", Fig. 8-54).
    - D. Transfer top cover vertical edge reference from original back curtain to new one (Item "A", Fig. 8-54).
    - E. Transfer location of drilled holes from original back curtain to replacement back curtain. Then punch reference holes in new back curtain.
  3. Install back curtain as follows:
    - A. Position center of new back curtain extension on center of center bow. Front edge of extension should be flush with front rib of center bow. Staple or tack extension to center bow. Start at center, keep trim material flat, and space tacks or staples about two (2) inches apart (Fig. 8-55).
    - B. With aid of helper, align bottom center of back curtain with center of trimstick. At same time, carefully align horizontal, lower edge reference mark at lower edge of trimstick (Fig. 8-54). Also align punched holes in back curtain with holes in top cover and trimstick.
- NOTE:** Original back curtains are stretched to a degree upon installation. Replacement back curtains are not stretched. During this operation, allow for uniform stretch in material by adjusting horizontal reference for proper final appearance.
- C. Working from center, staple or tack back curtain to trimstick. Maintain alignment of reference mark at trimstick, and keep material flat to trimstick between fasteners.
  - D. Fold back each side of curtain, shown in View "D", Figure 8-55, and install three staples or tacks at this location.
  - E. Space staples or tacks about two inches apart (about 40 tacks or staples). Avoid excessive stretching of material.
  - F. Allow 1/2 inch of back curtain to over-hang rear trimstick. Using scissors, cut off excess material beyond 1/2 inch over-hang (Fig. 8-54).
4. Cement original or replacement side quarter (foam) pad (Fig. 8-55) between center bow and rear bow on each side. If pad(s) from center to rear bow were damaged upon removal, replace them with equivalent foam rubber material.
  5. Position center of top cover listing on center of center bow and staple or tack in place. Space fasteners about two inches apart (Fig. 8-61).
  6. Attach hold-down cable rear spring (Fig. 8-54) to each side of trimstick (View "Y", Fig. 8-54).
  7. With aid of helper, complete installation of top cover as follows:
    - A. Zip top cover to back curtain (View "C", Fig. 8-61).
    - B. Align top cover at rear vertical reference marks and at trimstick drilled hole references (Items "A" and "B", Fig. 8-54). With helper holding trim in aligned position, double tack or staple at this location using 12 ounce tacks or equivalent staples.
    - C. Apply trim cement to lower area of side roof

rear rail and to top cover quarter retainer (flap). Center top (laterally) by aligning horizontal reference on each side at trimstick. Secure quarter retainer (flap) at lower area. Also, double staple or tack top cover at front of trimstick (Fig. 8-56 and View "Z", Fig. 8-54) using 12 ounce tacks or equivalent staples.

- D. Align top cover horizontal reference at center (in accordance with steps A and B above), with drilled holes and staple or tack in place. Work forward and rearward from center. Keep material in alignment and flat. Avoid stretching. Space staples or tacks about two inches apart.
- E. Trim off excess material beyond 1/2 inch over-hang (Fig. 8-54).

**NOTE:** If diagnosis prior to top cover removal revealed particular conditions (Such as: Loose material, etc.), the conditions can be corrected by adjusting top cover on trimstick at this time.

- 8. Position rear trimstick, gutter, and center bow assembly into body in reverse order of removal. With top half lowered, start one end of trimstick and gutter into body, then position opposite end into body.
- 9. Secure trimstick, gutter and center bow assembly to body as follows:
  - A. Manually raise top to up position. Secure back window guide control links. For attachment of control links, see: "Back Window Guide Control Link Removal and Installation" (Fig. 8-68).
  - B. Raise top several inches above windshield header. Install bushing in main hinge, align trimstick to main hinge attaching holes, and install trimstick attaching bolts (View "B", Fig. 8-57). Use caution to avoid dropping bolt. To avoid losing bolt, block openings at wheelhouse with several shop towels.
  - C. Lower top half-way. With bushing properly positioned in each outer rail, install attaching bolts (View "A", Fig. 8-57) securing outer rail to main hinge. Each bolt threads into hinge and is secured with lock nut.
  - D. Secure gutter retaining rod to five (5) clips on body (Fig. 8-63). Clips are located as follows: One clip on each side of each rear compartment lid hinge and one clip at rear center.

- 10. With top locked to windshield header, cement, align and secure upper attaching surfaces of quarter retainers (flaps) to side roof outer rear rails. Align quarter retainer seams with edges of side roof outer rear rails to remove all fullness from rear of top cover (Fig. 8-56). A forward draw on cover outer sides will aid this operation. Top cover binding along rear rails should not curl away from rails.

- 11. Install and align side roof rail rear weatherstrips. Adjust rear weatherstrips forward for butt fit when top is locked at windshield header. After tightening upper one or two screws, lower top part way to tighten lower screw.

**NOTE:** Side roof rail front weatherstrips are not designed to be adjusted "fore or aft". For improved contact at upper front corners, position windshield pillar weatherstrips upward.

- 12. Remove protective covers and clean up.

## FOLDING TOP SIDE QUARTER PAD ASSEMBLY

A right and a left side quarter (stay) pad assembly (Fig. 8-55) secures to the front roof rail and to the center bow assembly. The pad assemblies do not secure to the front roof bow. Pad assemblies consist of strong webbing material, a cloth cover, and soft foam padding approximately 1/4 inch thick. The rear end of the pad assemblies are reinforced with 12 ounce tacks. Additionally, the rear assemblies are secured with staples at the rear. Pad assemblies are secured at the front with attaching screws. Access for removal and installation of a side quarter pad assembly requires detaching the top cover across the front roof rail; the listing at the front roof bow and the back curtain extension at the side affected.

### Removal

- 1. Apply protective covers as required to interior trim, hood and rear deck of car.
- 2. With top lowered, detach following from front roof rail:
  - A. Front roof rail front weatherstrip (complete) (Fig. 8-53).
  - B. Front roof rail rear weatherstrip (at outer ends).
  - C. Top Cover.

**NOTE:** Before detaching top cover, reference mark complete front edge of front roof rail on top cover.

3. Raise top and lift several inches above windshield header. Detach hold-down cables at front (Fig. 8-54).
  4. Turn front of top cover rearward and detach top cover front listing from front roof bow (Fig. 8-61).
  5. Using scissors or equivalent tool, make lateral cut through side quarter (foam) pad in line with center bow. Foam pad is cut for access to back curtain extension attachment. Detach back curtain extension from center roof bow where extension overlaps side quarter pad assembly (Fig. 8-55).
  6. Reference mark inner and outer edges of pad assembly on front roof rail and on center bow. Remove attaching screws securing pad assembly at front roof rail (Fig. 8-55).
  7. Detach cemented cover of pad assembly (cemented at front, rear and outer edges) and carefully detach side quarter (foam) pad from webbing.
  8. Detach side quarter pad assembly from center bow by removing staples and tacks, and remove pad assembly.
2. Complete side quarter pad assembly build-up as follows:
    - A. With top several inches above windshield header, secure back curtain extension to center bow (Fig. 8-55). Space staples or tacks about two inches apart.
    - B. Lock top at front. Using trim cement sparingly, position and secure (foam) pad to side quarter webbing (Fig. 8-55). Make butt joint between foam pad on webbing and on back curtain extension. Secure butt joint with length of two (2) inch cloth-back body sealing tape.
    - C. Using trim cement sparingly around edges, position and secure cover of side quarter pad assembly.
  3. Position and secure top cover front listing to front roof bow (Fig. 8-61). For further information see: "Top Cover Installation".
  4. With top several inches above windshield header, position side quarter pad assembly at outer front corner and secure hold-down cable at front (Fig. 8-54).
  5. Align and secure top cover to front roof rail (Fig. 8-53). See "Top Cover Installation".
  6. Install front roof rail front and rear weatherstrips (Fig. 8-53).
  7. Remove protective covers and clean up as required.

## Installation

1. Install side quarter (stay) pad assembly as follows:
  - A. With top locked at windshield header, and top cover pulled away for access, position pad assembly at center bow reference marks as determined and marked in Step 6 above. With pad cover raised, secure webbing to center bow with nine (9) equally spaced staples. Align rear of pad flush with rear of center bow tacking strip.
  - B. Position and install six (6) 12 ounce reinforcement tacks to secure other rear of webbing at center bow (Fig. 8-55).
  - C. With aid of helper, tighten the webbing by pulling forward, align webbing with reference marks at front roof rail and install inner four attaching screws (Fig. 8-55). Remove excess webbing at front roof rail trim line. Make opening in webbing for hold-down cable metal tab and for attaching screw.

## FOLDING TOP GUTTER

The inward folding top rear gutter is constructed of convertible top trim material. The front of the gutter secures to the rear trimstick. The rear of the gutter secures to the body by means of a retaining rod and five (5) attaching clips (Fig. 8-63). The clips are located as follows: One clip on each side of each rear compartment lid hinge, and one clip at the rear center.

## Removal and Installation

1. Detach back curtain assembly along bottom as described in "Back Curtain (Less Top Cover) Removal and Installation" (Fig. 8-55).
2. Remove original gutter by cutting along rear trimstick. Use care during original gutter removal not to cut folding top compartment bag (Fig. 8-63).

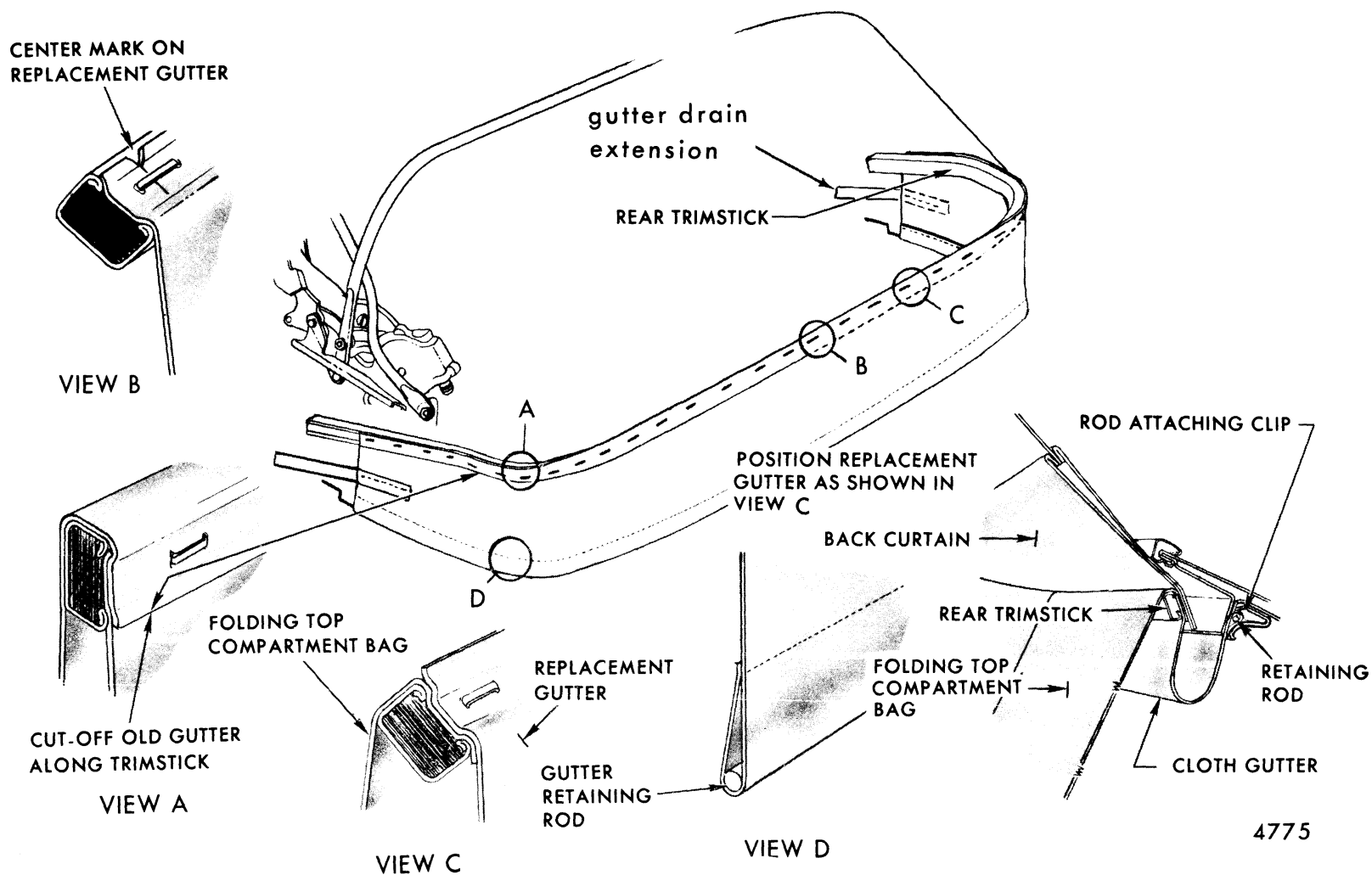


Fig. 8-63-Inward Folding Top Gutter Attachment



3. Determine and mark center on replacement gutter by folding gutter in half.
4. Transfer retaining rod from original to replacement gutter as shown in Figure 8-63. This operation can be done after securing gutter to trimstick.
5. Position center of replacement gutter over folding top compartment bag on center of trimstick and staple or tack in place (View "C", Fig. 8-63). Start at center and work to each side. Space staples or tacks about four (4) inches apart.
6. Install back curtain and top cover assemblies as described in "Back Curtain (Less Top Cover) Removal and Installation".

## FOLDING TOP HARDWARE COMPONENTS

### FRONT ROOF RAIL LOCK

**CAUTION:** A safeguard has been built into the front roof rail lock to prevent moving the lock handle to the closed position when the top is unlocked. Lowering a top with the lock handle in the closed or locked position causes breakage of the handle. The safeguard consists of a stop to prevent rotating the handle from the open to the closed position unless the lock hook is engaged. Do not attempt to force the lock handle past the stop.

#### Removal and Installation

1. Manually, unlock and support front roof rail several inches above windshield header.
2. With lock handle in open position as shown in Figure 8-64, detach spring, remove lock attaching screws and remove lock.
3. To install, reverse removal operations. Check operation of locks. Always lock left side of top before locking right side.

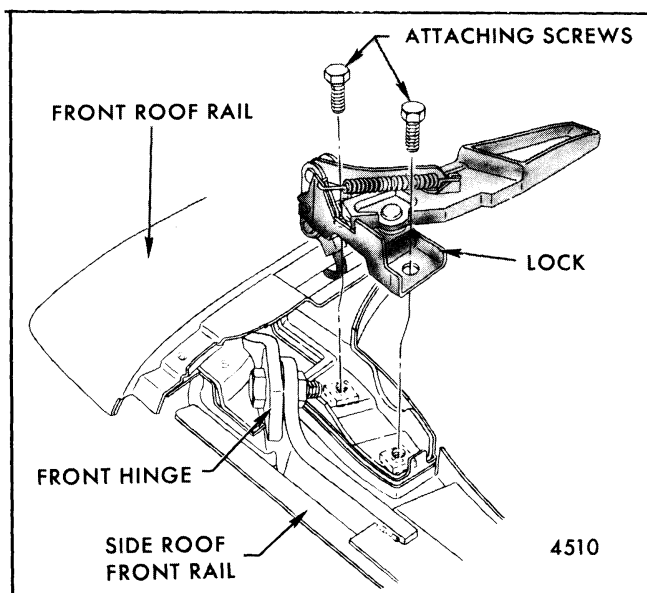


Fig. 8-64-Front Roof Rail Lock Attachment

### FRONT ROOF RAIL LOCATING PIN

A locating pin, of plastic construction, secures to the front of each side roof front rail by an attaching screw (Fig. 8-65).

#### Removal and Installation

1. Lower top part-way, or completely.
2. Remove attaching screw and remove locating pin (Fig. 8-65).
3. To install, position locating pin on side roof front rail and install attaching screw.
4. Raise and lock top at windshield header.

### FOLDING TOP ELECTRIC MOTOR AND/OR RELAY

The folding top electric motor and relay are secured to the rear seat back panel and are accessible in the rear seat area (Fig. 8-66).

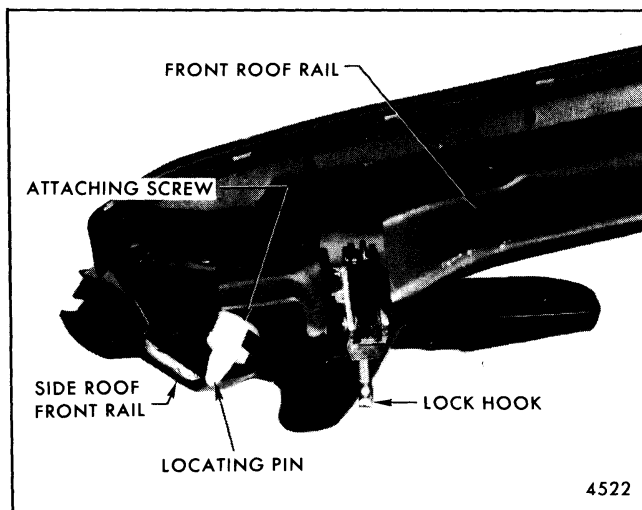


Fig. 8-65-Front Roof Rail Locating Pin

## Removal and Installation

1. Remove rear seat cushion and rear seat back.
2. Detach drive cables at each top actuator.
3. Detach electric motor connectors from relay (Fig. 8-66).
4. Detach relay attaching screw and remove relay.
5. Remove screw securing motor ground to rear seat back panel.
6. Detach rubber grommets securing motor support to rear seat back panel (Fig. 8-66).
7. Detach right and left drive cables from electric motor reduction unit (Fig. 8-66).
8. Remove two attaching screws securing motor support to motor and remove motor.
9. To install, reverse the removal operations. To ease installation of motor and attaching bracket, apply solvent (mineral spirits or equivalent) to grommets on motor bracket. Check operation of motor for proper ground before installing trim.

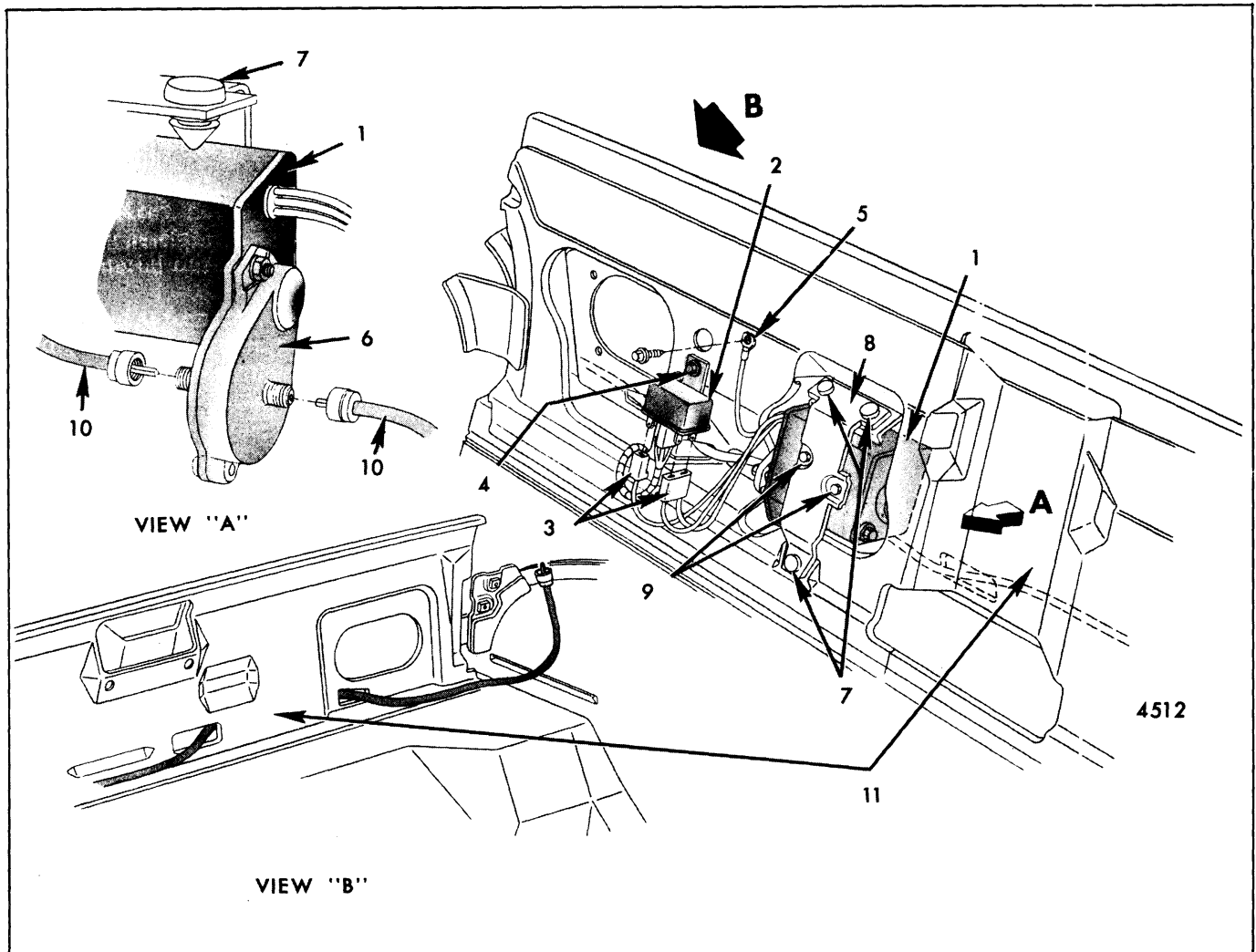


Fig. 8-66-Folding Top Electric Motor and Relay

- |                              |                                    |                                  |                          |
|------------------------------|------------------------------------|----------------------------------|--------------------------|
| 1. Electric Motor            | 4. Relay Attaching Screw           | 6. Electric Motor Reduction Unit | 9. Motor Attaching Screw |
| 2. Relay                     | 5. Motor Ground to Seat Back Panel | 7. Rubber Grommet(s)             | 10. Drive Cable          |
| 3. Electric Motor Connectors |                                    | 8. Motor Support                 | 11. Seat Back Panel      |

## FOLDING TOP ACTUATOR DRIVE CABLE - Right and/or Left

### Removal and Installation

1. Remove rear seat cushion and rear seat back.
2. Detach drive cable at top actuator assembly.
3. Detach right and/or left drive cable at electric motor reduction unit (Fig. 8-66). For removal of left drive cable, first detach motor.
4. To install, reverse removal operations. To facilitate engagement of drive cable, push and rotate cable opening on actuator by finger or with suitable tool.
2. Carefully lift control link, which is under spring tension, from attaching bracket. While carefully lowering control link, lift compartment bag over control link and lay control link on floor. Bushing need not be removed from stud unless necessary.
3. Through opening in compartment bag, detach and remove actuator spring, first from link, then from floor bracket.
4. Working through opening in compartment bag or through rear compartment, remove hair pin clip and washer from control link front attaching stud and remove control link.
5. To install, reverse removal operations.

## BACK WINDOW GUIDE CONTROL LINK AND SPRING

The purpose of guide control links and springs at the back window is to guide the back window downward beyond the rear trimstick when lowering the inward folding top. As shown in Figure 8-68, the links and springs secure to attaching brackets at the back window and at the folding top compartment floor. The actuator springs are located under the folding top compartment bag. Inward folding tops must not be lowered if control links and/or actuator springs are disconnected for any reason.

### Removal and Installation

1. With top in raised position, remove hair pin clip and washer from link attaching stud at back window.

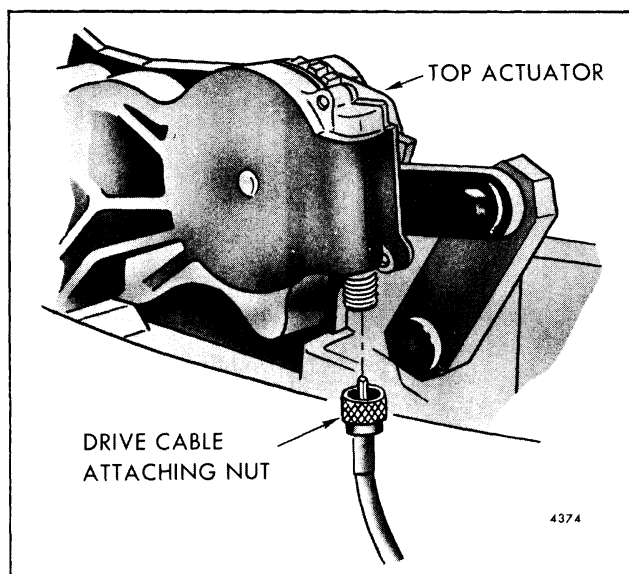


Fig. 8-67-Drive Cable To Top Actuator Attachment

## FOLDING TOP ACTUATOR ASSEMBLY

A folding top actuator assembly is secured to each main hinge by three attaching screws (Fig. 8-70) and to the side rail system by a shoulder bolt. The shoulder bolt threads into the actuator link and is locked in place with a set screw. Actuator assemblies are operated by electrically powered drive cables.

### Removal

Removal and installation of top actuators is easier with the top lowered. However, actuators can be replaced with the top raised.

1. Remove rear seat cushion and rear seat back.
2. Reposition bottom of main hinge cover panel on side affected for access to attaching screws.
3. Disconnect drive cable from actuator assembly (Fig. 8-67).
4. Remove actuator attaching screws (Fig. 8-70).
5. Loosen set screw in side rail actuator link and remove shoulder bolt securing sector arm to actuator link.

### Installation

1. Position top actuator assembly to main hinge and install in reverse order of removal. Finger start attaching screws on inner face of main hinge.
2. Align side rail actuator link with sector arm of actuator. Lubricate shoulder of attaching bolt with grease (Lubriplate or equivalent), and in-

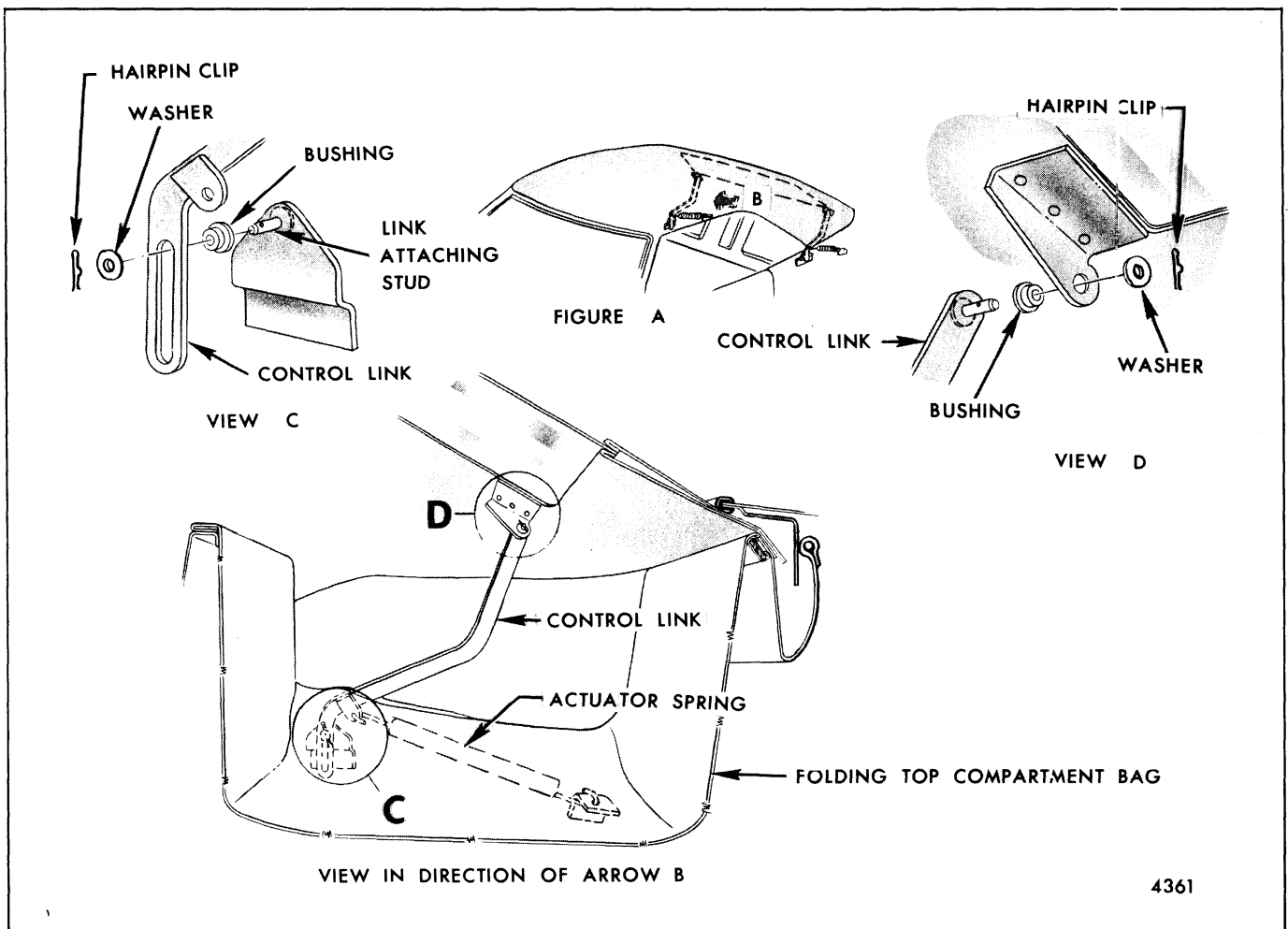


Fig. 8-68-Back Window Guide Control Link Attachment

stall bolt. Tighten set screw on side rail actuator link to lock attaching bolt.

3. Tighten attaching screws.
4. Synchronize actuators, check operation of top and install previously removed trim parts.

### PROCEDURE FOR SYNCHRONIZING FOLDING TOP ACTUATORS

Both folding top actuators must be synchronized or "in phase" for proper operation of the top. If syn-

chronization is necessary due to removal or replacement of a folding top actuator, or for some other service operation, proceed as follows:

1. Raise top and lock at windshield header.
2. Disconnect drive cables at each top actuator (Fig. 8-67). Manually shake each side roof rail to stabilize in its proper position.
3. Connect drive cables to each top actuator. Actuators are now synchronized for proper operation of top. Check operation of top.

## FOLDING TOP ADJUSTMENT

### DESCRIPTION

Before performing any adjustments on the inward folding top, the technician should read and understand the complete adjustment section as covered in

this section. Knowledge of the design, operation, attachment and adjustment sequence of component units is essential to the technician performing top alignment operations. Side roof rail assemblies are designed to provide three basic functions for the

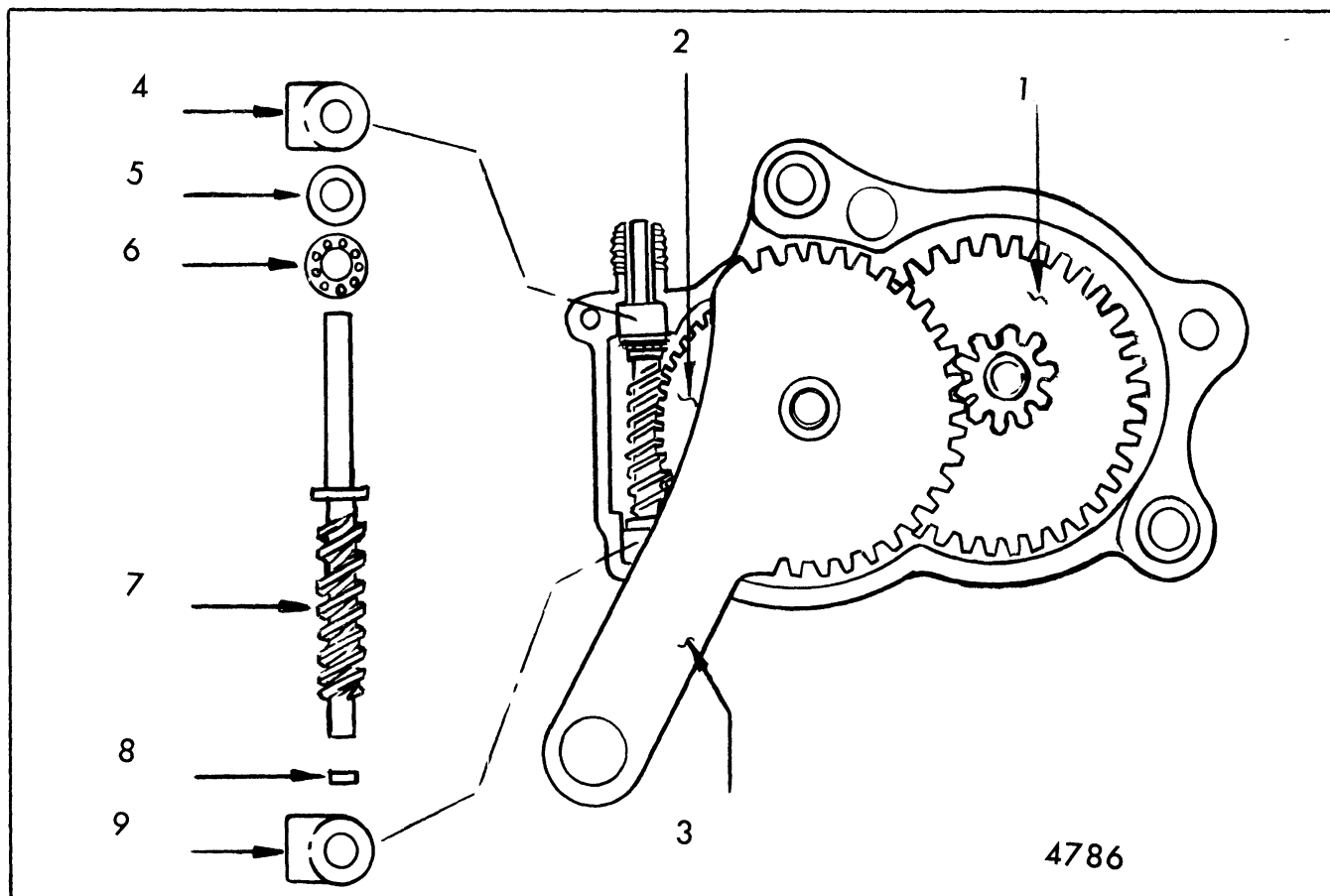


Fig. 8-69-Folding Top Actuator Components

- |                                  |                               |
|----------------------------------|-------------------------------|
| 1. Gear and Pinion Assembly      | 5. Washer                     |
| 2. Worm and Pinion Gear Assembly | 6. Retainer and Ball Assembly |
| 3. Sector Assembly               | 7. Worm Gear                  |
| 4. Front Worm Bearing            | 8. Thrust Plug                |
|                                  | 9. Rear Worm Bearing          |

proper operation of the inward folding top.

1. The first function provides a lifting tension in the side rail system when the top is down or stacked. This tension is required to assist and coordinate the proper unfolding of the side roof rails when raising the top. The tension is achieved by an outward pull of the rear control link at the mounting plate.

The adjustment is controlled by the serrated bushing of the control link.

Improperly tensioned rear control links can cause binding and/or damage conditions to the rail system when raising the top.

2. The second function provides proper height and length to the side roof rails. Height of the side

rails is important to side glass alignment. Length of the side rails positions the front roof rail locating pin with the striker in the windshield header.

The height and length adjustments are controlled simultaneously by the setting of the side roof rail set screw.

side rails have mispositioned set screws, the windows cannot be aligned properly and locating pins cannot be aligned with the windshield header.

3. The third function provides a measurable outward force by the side rails which is necessary for proper weatherstrip contact and side rail rigidity. The outward force of each side rail is adjustable and rests against the center bow stop

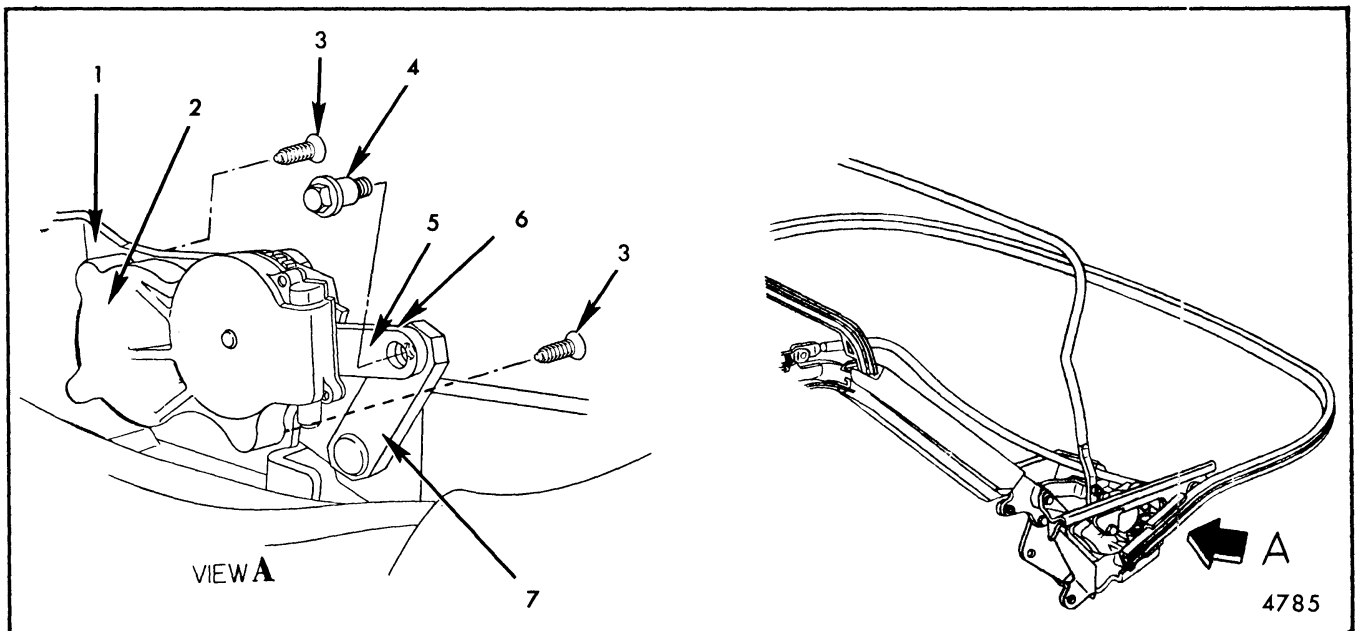


Fig. 8-70-Folding Top Actuator Attachment (View in Direction of Arrow "A")

- |  |                            |
|--|----------------------------|
| 1. Main Hinge                                | 4. Shoulder Bolt           |
| 2. Top Actuator Assembly                     | 5. Actuator Sector Arm     |
| 3. Flat-head, Cross-recessed Attaching Screw | 6. Shoulder Bolt           |
|  | Locking Set Screw          |
|  | 7. Side Rail Actuator Link |

on each side. The center bow assembly, consisting of the center bow and side roof outer rear rails, straddles the inward folding side roof rails.

Adjustment of the outward force is controlled by the fore-aft setting of the rear control link mounting plate.

Improper positioning of the rear control link mounting plate can cause corresponding folding top misalignment problems and/or, if over-adjusted, damage to folding top components.

## FOLDING TOP STACKED POSITION TENSION ADJUSTMENT

The inward folding top, when down or stacked, must possess a degree of tension in the side rail system to assist and coordinate the proper unfolding of the right and left side rails when the top is raised.

Stacked or down position tension adjustment must be completed before side roof rail (up position) tension adjustment is attempted. Stack tension adjustment is not affected by side roof rail (up position)

tension adjustment. However, side roof rail (up position) tension adjustment is affected by stack (or down position) adjustment. On a properly stacked top, the front roof rail is parallel to the beltline of the car, and allows for normal top boot installation.

To obtain proper folding top stack tension adjustment, proceed as follows:

1. Synchronize Folding Top Actuators - Refer to procedure for synchronizing folding top actuators. If synchronization does not correct stack height, correct stack tension adjustment by proceeding with following steps.
2. Lower top into folding top compartment.
3. Loosen top control link attaching nut (Item "A", Fig. 8-71) on each side. Allow front and side roof rails to lay normally in folding top compartment.
4. Position top control link serrated bushing outward on each side by raising folded side rail at center and tighten attaching nut.
5. Check for tension on stacked folding top.

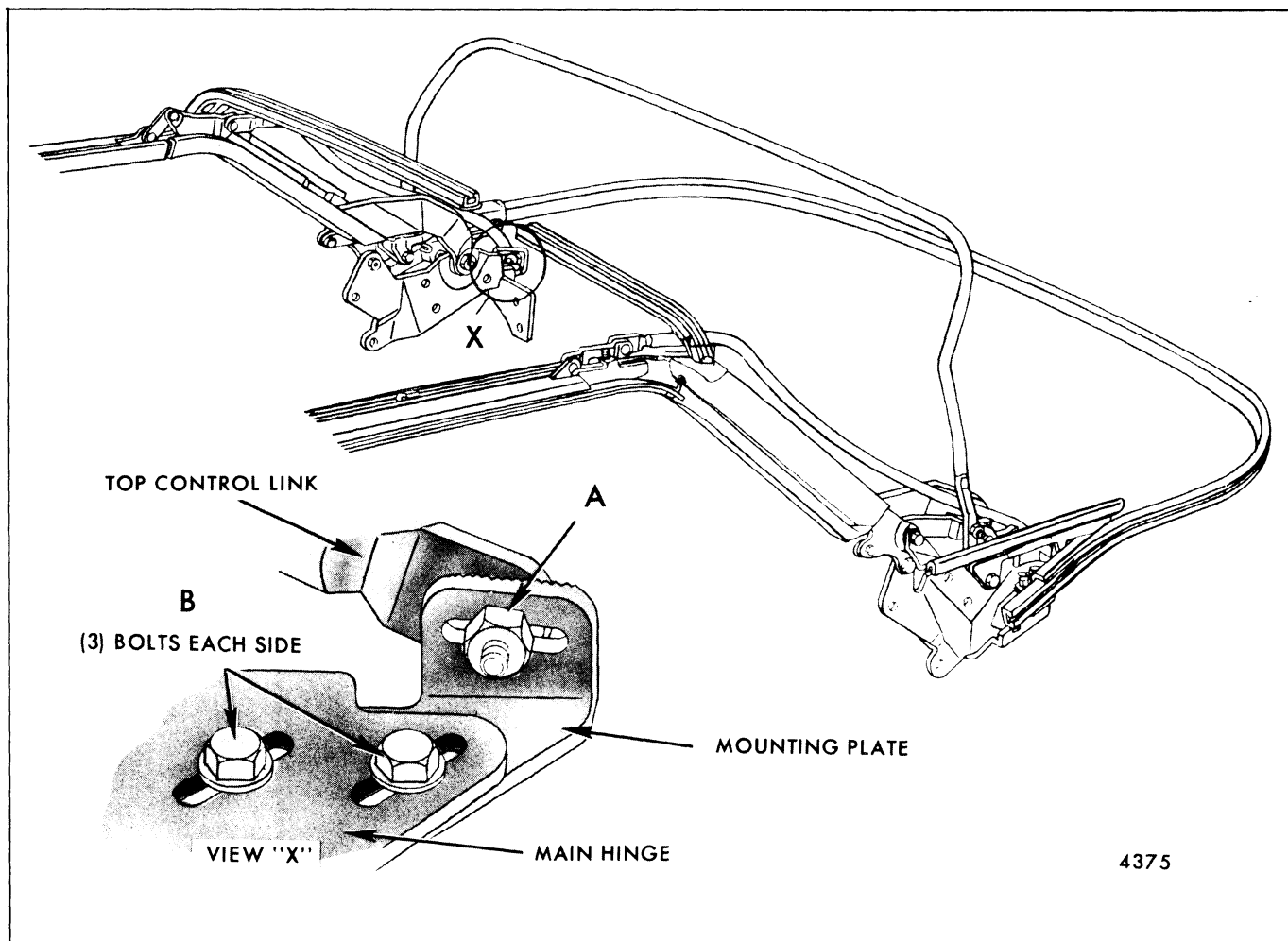


Fig. 8-71-Top Control Link and Mounting Plate Attachment

6. Repeat step 4 as necessary until proper and equal tension is obtained on each side. Tighten attaching nuts to proper torque.

## LOCATING PIN AND SIDE ROOF RAIL HEIGHT ADJUSTMENT

### Description

When raising a top, always lock the left lock handle first. The left striker guide hole is round and the right striker guide hole is slotted laterally. To lock the left side of the top, pull down on the front roof rail with one hand to position the left locating pin in the striker hole. Then rotate the lock handle to the locked position. Repeat the operation on the opposite side. Manual assistance (up to 30 pounds) may be required to position locating pins in the windshield header. This is a normal condition.

Figure 8-72 illustrates a body dimensional specification from a bolt on the main hinge to a properly installed striker on the windshield header. The distance from the center of the striker guide hole, "A", to the center of the main hinge bolt, "B" as shown, is  $56\frac{7}{32}$ " plus or minus  $\frac{3}{16}$ ". Adding the tolerance, the maximum measurement is  $56\frac{13}{32}$ ". Subtracting the tolerance, the minimum measurement is  $56\frac{1}{32}$ ".

The locating pin and height of the side roof rails are controlled simultaneously by the side rail set screw (Fig. 8-74). Figure 8-73 portrays proper adjustment of the set screw and conditions that can be caused by improperly adjusted set screws. While the set screw is adjustable, it has only one proper setting.

### Procedure

1. Raise top and back off set screw located at center

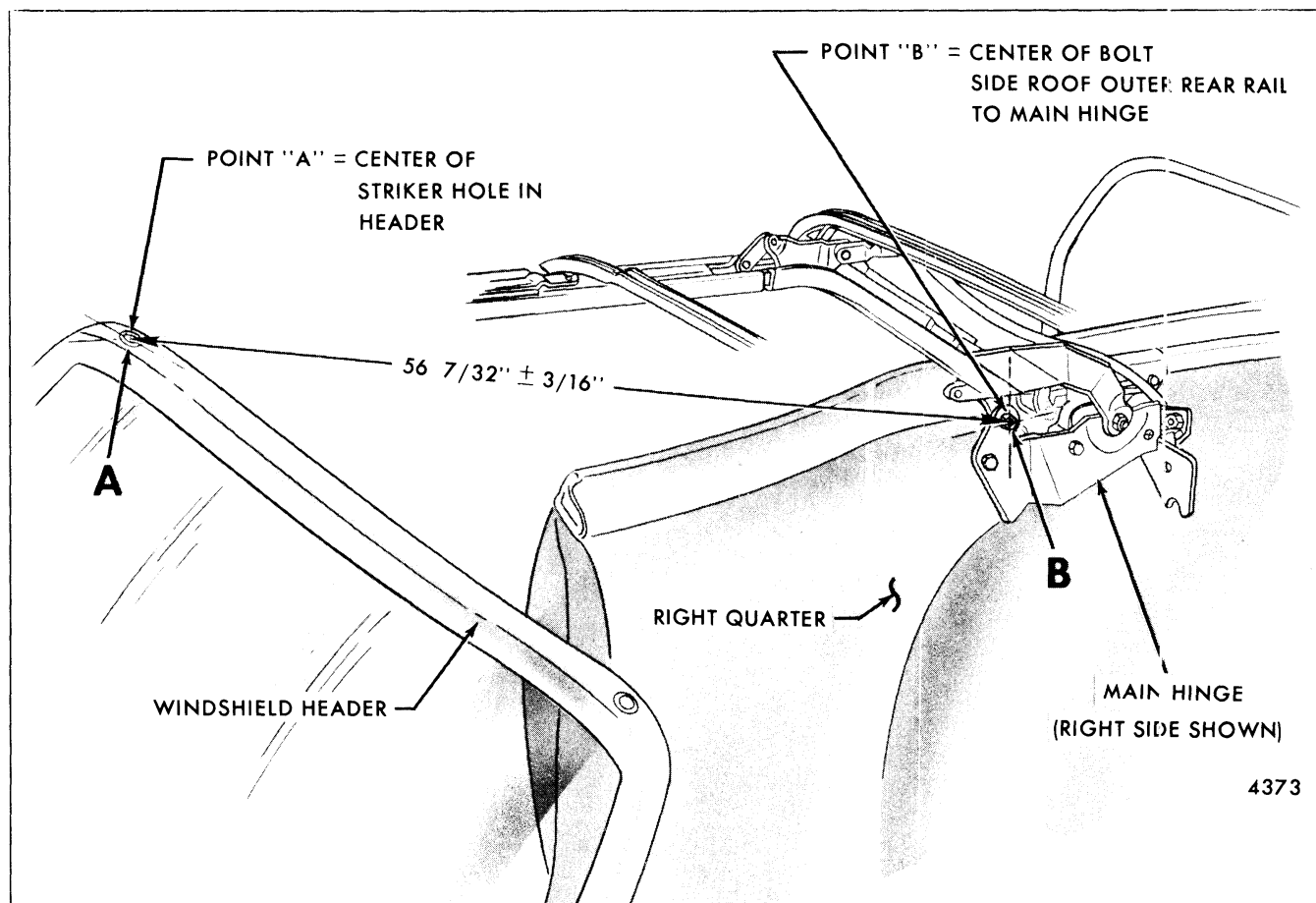


Fig. 8-72-Body Dimensional Specification

of each side rail (Fig. 8-74). Set screw is 1/8 inch hex head.

2. Position locating pins in windshield header striker guides and lock top to header. Position left pin first.
3. Manually position and then support each side roof rail at proper height over side windows.

Specified dimension from outer corner of side rail to quarter panel (Fig. 8-75) is as follows:

- A. Dimension "A" (measured directly with tape measure) is 17" plus or minus 1/8".
  - B. Dimension "B" (determined with straight edge and vertical measurement as shown) is 13-1/8" plus or minus 1/8".
4. With side rails at proper height, adjust each set screw clockwise until it bottoms at side rail. Then, back off set screw one-half turn. Readjust each set screw, if necessary to correct side rail height, after all other tensioning adjustments are completed.

**NOTE:** Application of high quality, plastic thread adhesive to exposed threads on each set screw (Fig. 8-74) is recommended at this time. Follow label directions.

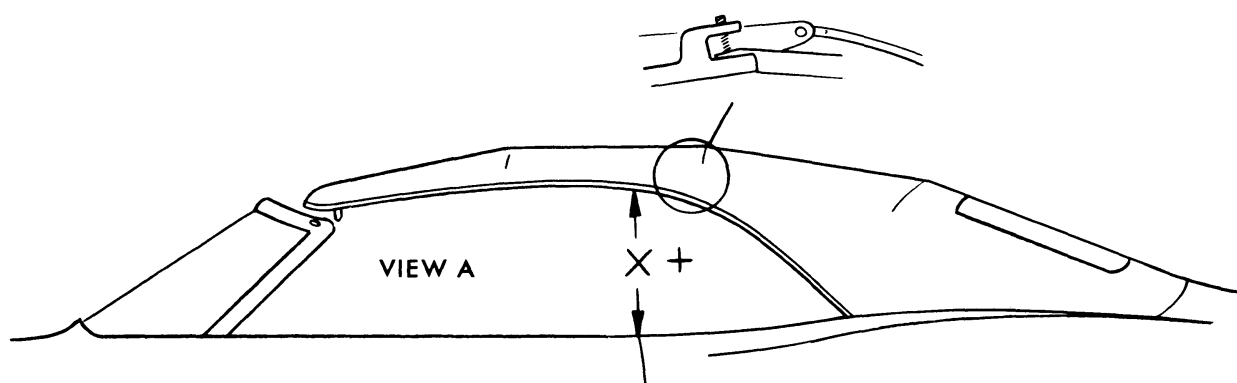
## TENSION ADJUSTMENT AND TENSION CHECK OF (UP POSITION) SIDE ROOF RAILS

### Description

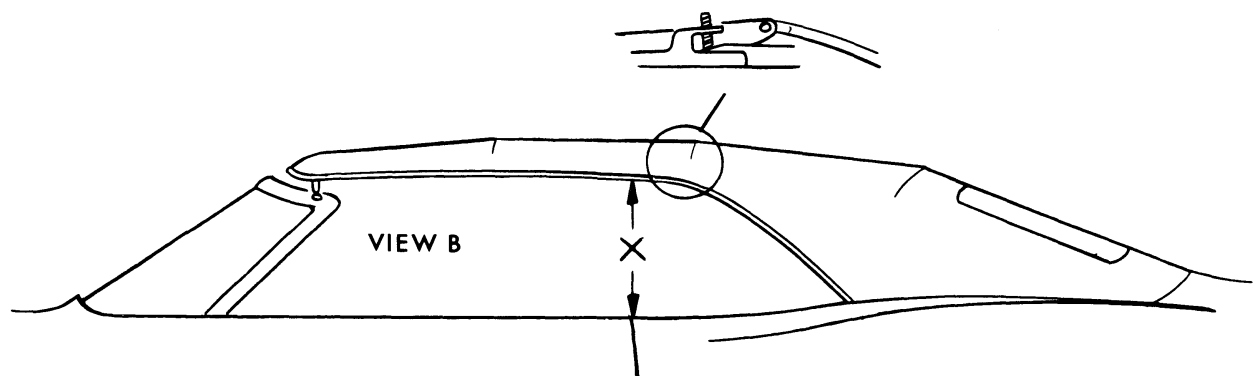
The side roof rails of an inward folding top exert a specified outward force at the center hinge area when the top is raised and locked at the windshield header. The outward force is required for proper contact of weatherstrips to side windows and for stability of the side roof rails.

When the top is raised and locked, the inner side rails rest with an outward pushing force on a stop at each end of the center bow. Figure 8-76 portrays a cross-section of the left and right side roof inner rear rails resting on center bow stops.

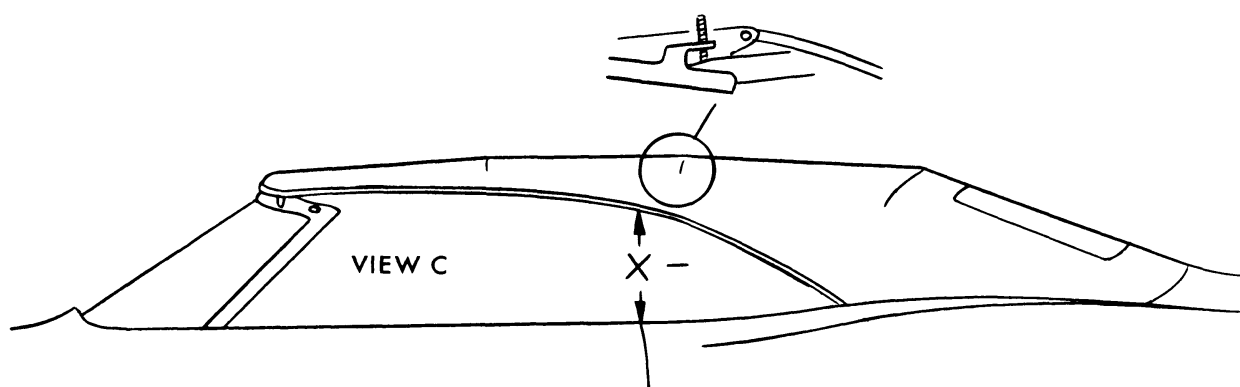




"HIGH SHOULDER CONDITION" CAUSED BY SET SCREW TOO DEEP  
LOCATING PIN TOO SHORT



"PROPER ADJUSTMENT CONDITION" FOR PROPER SETTING SEE:  
"SIDE ROOF RAIL AND LOCATING PIN ADJUSTMENT PROCEDURE"



"LOW SHOULDER CONDITION" CAUSED BY SET SCREW NOT DEEP ENOUGH  
LOCATING PIN TOO LONG

4721

Fig. 8-73-Side Roof Rail and Set-Screw Adjustment

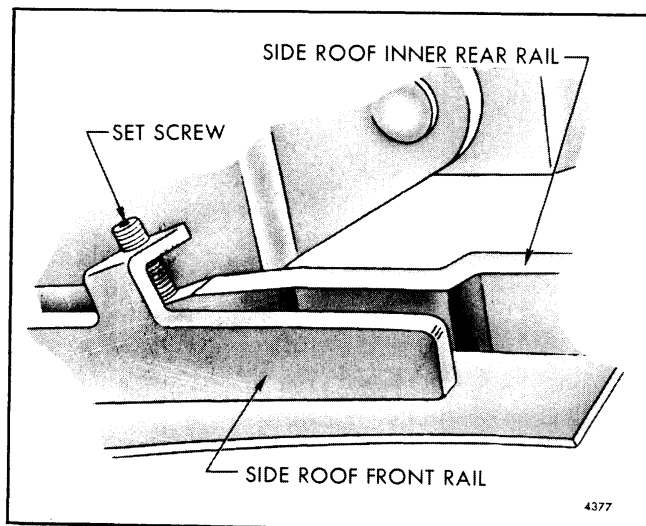


Fig. 8-74-Side Roof Rail Set-Screw

volves separating one side roof rail inwardly from the center bow stop by pulling simultaneously on both side roof inner rear rails. The side roof rail with the least tension always separates first. Check the separation with due care and with proper lighting. The best location to check the separation is inside the car from the rear of the center bow as shown in Figure 8-78.

### SIDE ROOF RAIL UP POSITION TENSION ADJUSTMENT

#### Procedure

In the event one or both side roof rails require tension adjustment, it is first necessary to check and, if

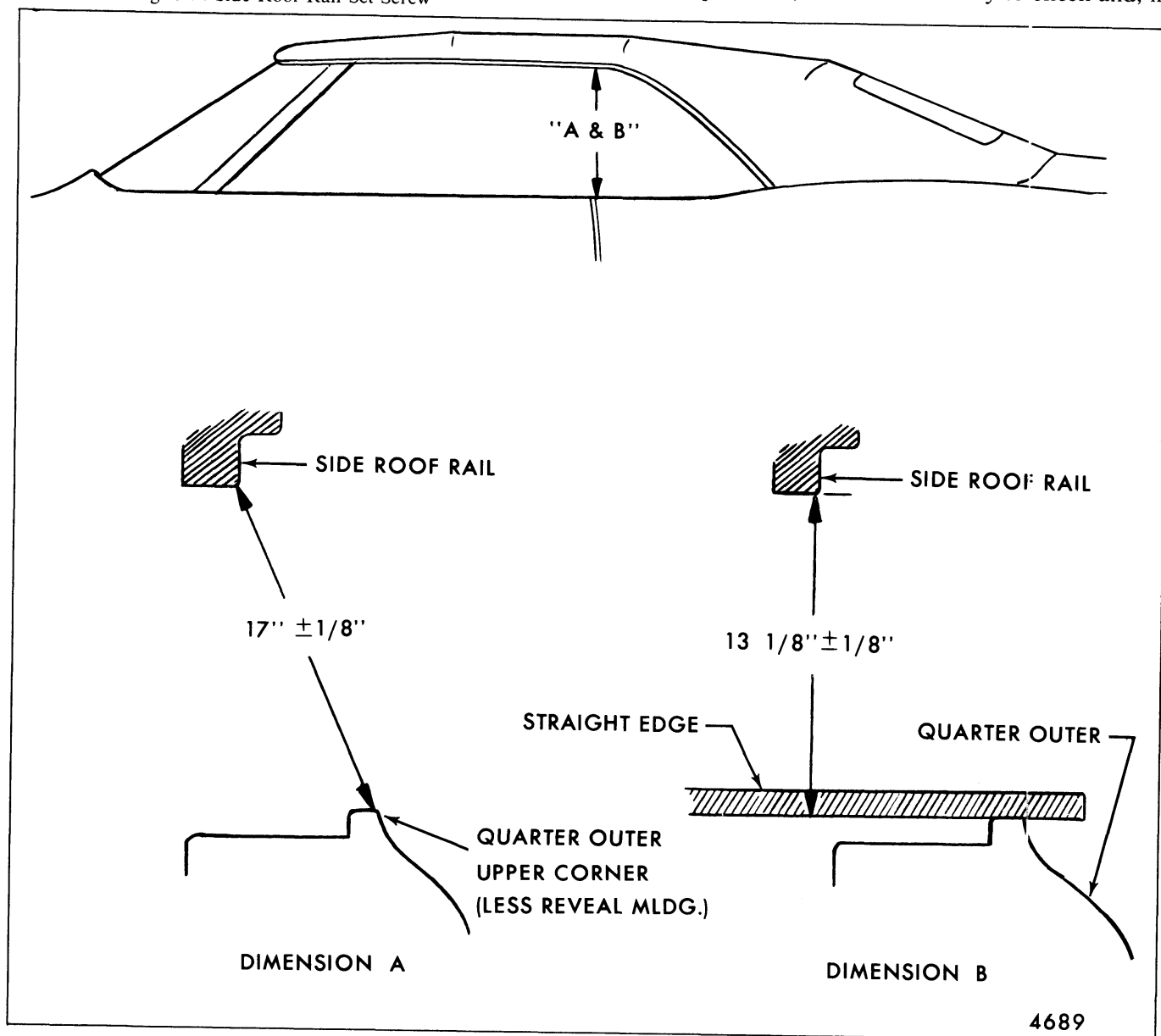


Fig. 8-75-Height of Side Roof Rails

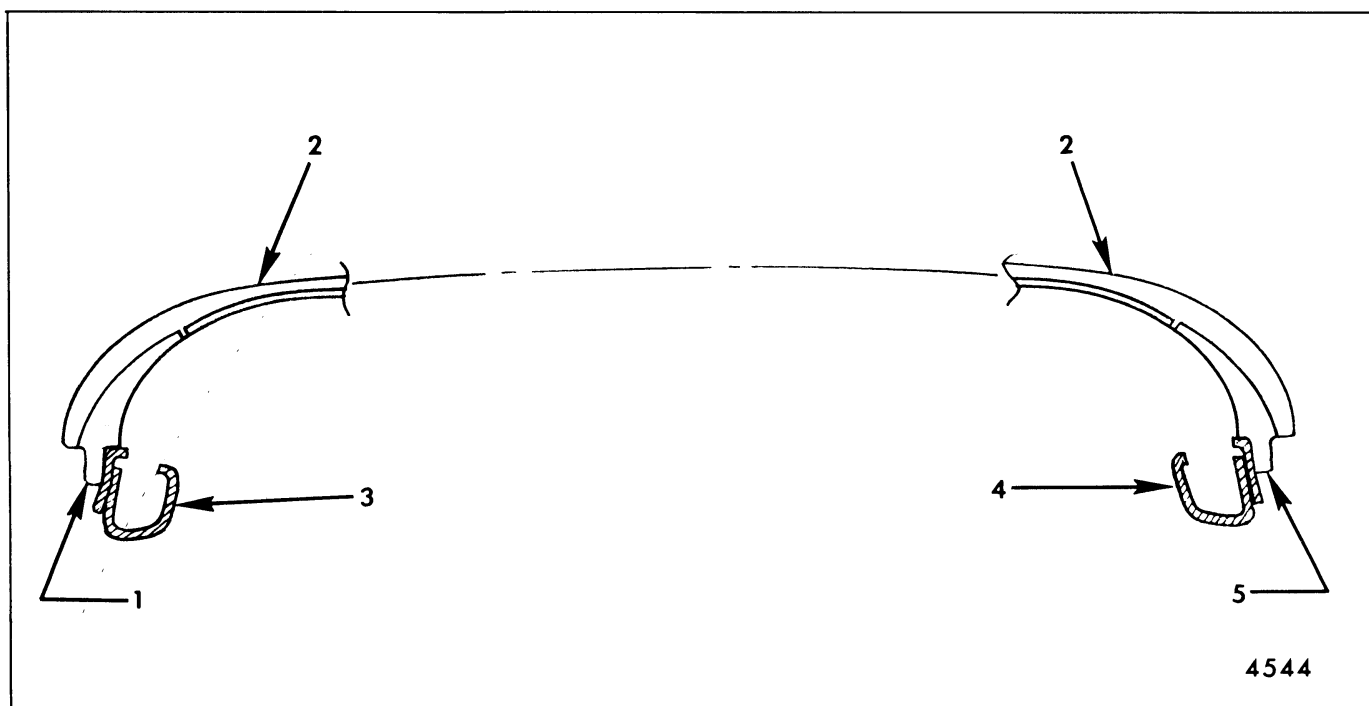


Fig. 8-76-Cross Section of Side Rail to Center Bow Stop Alignment

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. Center Bow Stop (Left)           | 4. Side Roof Inner Rear Rail (Right) |
| 2. Center Bow Assembly              | 5. Center Bow Stop (Right)           |
| 3. Side Roof Inner Rear Rail (Left) |                                      |

The side roof rail tension checking procedure is necessary, to complete the "folding top stacked position and adjustment", then proceed as follows:

1. Raise the top two to three feet above windshield header.
2. Scribe fore-aft location of mounting plate at main hinge for accuracy of controlling adjustment.
3. Loosen three mounting plate attaching bolts (Fig. 8-71).
4. Using pry-bar or suitable tool, slide mounting plate in small increments ( $1/16$  to  $1/8$  of an inch) "forward" (to decrease tension), or rearward (to increase tension).
5. Tighten only two mounting plate bolts for checking purposes.
6. Repeat Step 4 as required.
7. Tighten all mounting plate bolts when proper adjustments have been made.

## SIDE ROOF RAIL TENSION CHECK

### Procedure

The following procedure may be used to facilitate checking the tension of inward folding side roof rails.

1. With top raised and locked at windshield header, mount tension checking tool (J-23790 or BT-7111, or equivalent) on each inner rear rail at center bow (Fig. 8-77).
2. Tighten tensioning device in small increments while observing ends of center bow for separation at affected side rail. Tighten tensioning device until a  $1/16$ " separation occurs. Use flashlight and  $1/16$ " shim. The separation should not exceed  $1/16$ ".
3. When ( $1/16$ " separation occurs at one side rail at a scale reading below 50 pounds, same side rail is insufficiently tensioned and requires adjustment. Adjust affected control link mounting plate rearward to increase tension.

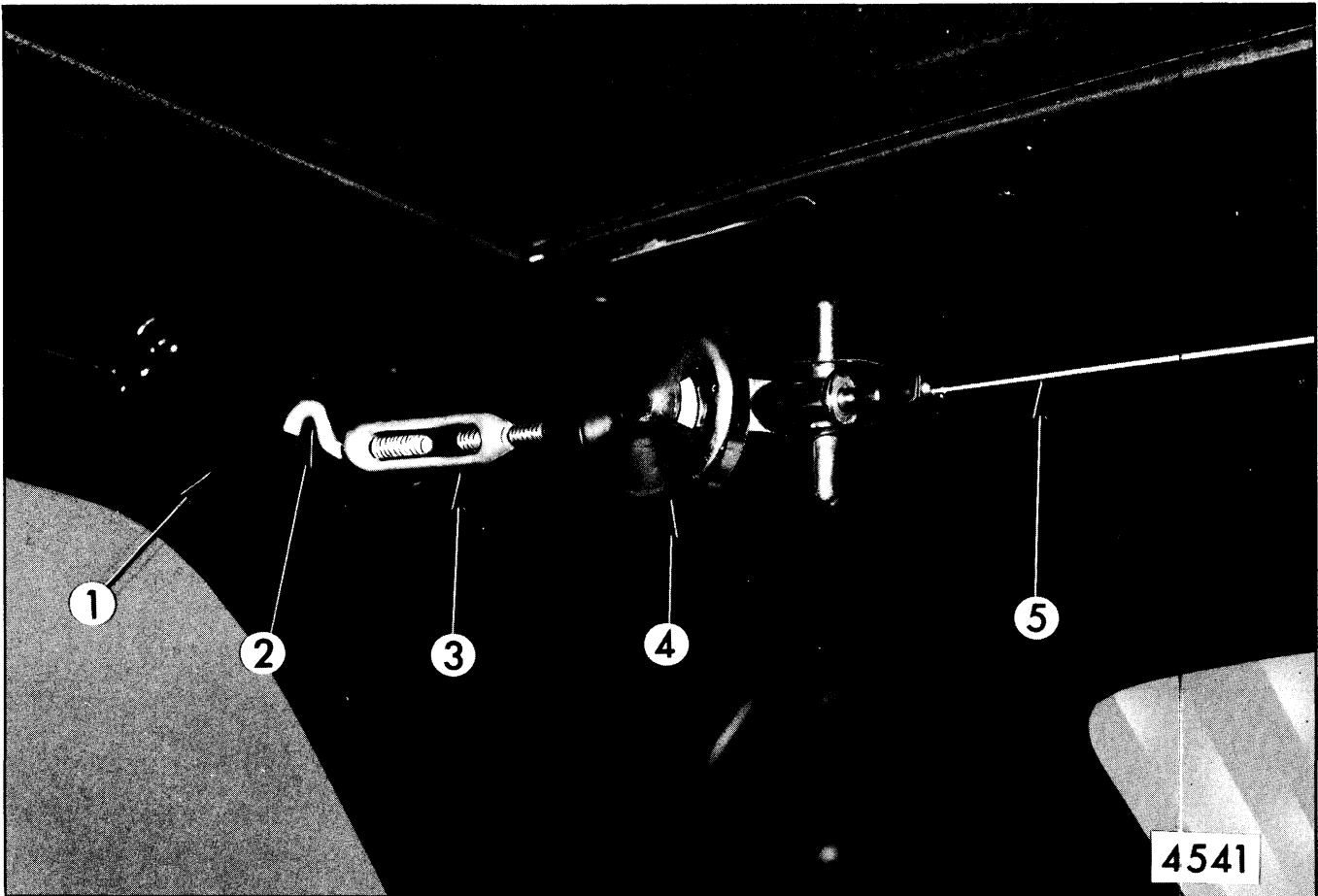


Fig. 8-77-Inward Folding Top Tension Checking Tool

- |                              |                  |
|------------------------------|------------------|
| 1. Side Roof Inner Rear Rail | 3. Turn-Buckle   |
| 2. Attaching Hook            | 4. Tension Scale |
|                              | 5. Cable         |

4. Cross-check body with tram gauge or tape measure as described in Figure 8-79. Side rails are in good alignment when both diagonal measurements are within  $\frac{3}{8}$  of an inch. Re-check measurements to assure accuracy. If difference between measurements exceeds  $\frac{3}{8}$  of an inch, side rail of longer measurement requires adjustment to decrease tension. In this event, adjust affected control link mounting plate forward.

5. An inward folding top is in proper alignment when following two conditions are present:

A. When tension checking tool indicates a minimum of 50 pounds of force to separate side rail  $\frac{1}{16}$  of an inch from center bow stop.

B. When diagonal measurements illustrated in Figure 8-79 are within  $\frac{3}{8}$  of an inch.

### FRONT ROOF RAIL LOCK HOOK ADJUSTMENT

Conditions of unsatisfactory lock operation caused by the lock hook can be corrected as follows:

1. To tighten or increase locking action, turn lock hook clockwise.
2. To reduce or decrease locking action, turn lock hook counterclockwise (Fig. 8-64).

**NOTE:** Always lock left side of top before locking right side.

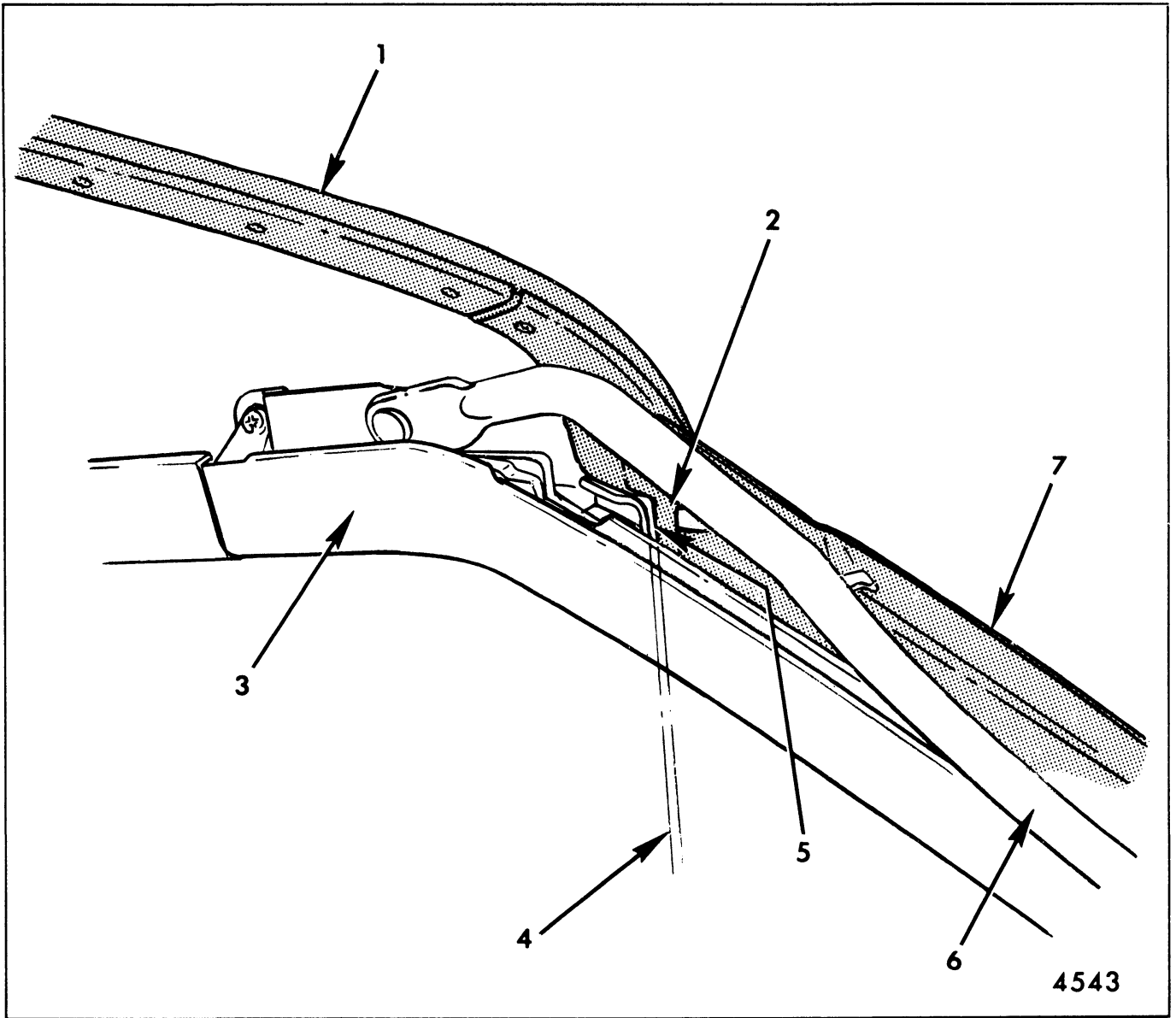


Fig. 8-78-Checking Separation of Side Rail from Center Bow Stop (Inside Car)

- |                         |                         |
|-------------------------|-------------------------|
| 1. Center Bow           | 5. Check With Shim in   |
| 2. Center Bow Stop      | Direction of Arrow      |
| 3. Side Roof Inner Rear | 6. Rear Control Link    |
| Rail                    | 7. Side Roof Outer Rear |
| 4. 1/16" Separation     | Rail (Part of Center    |
| Occurs Here             | Bow Assembly)           |

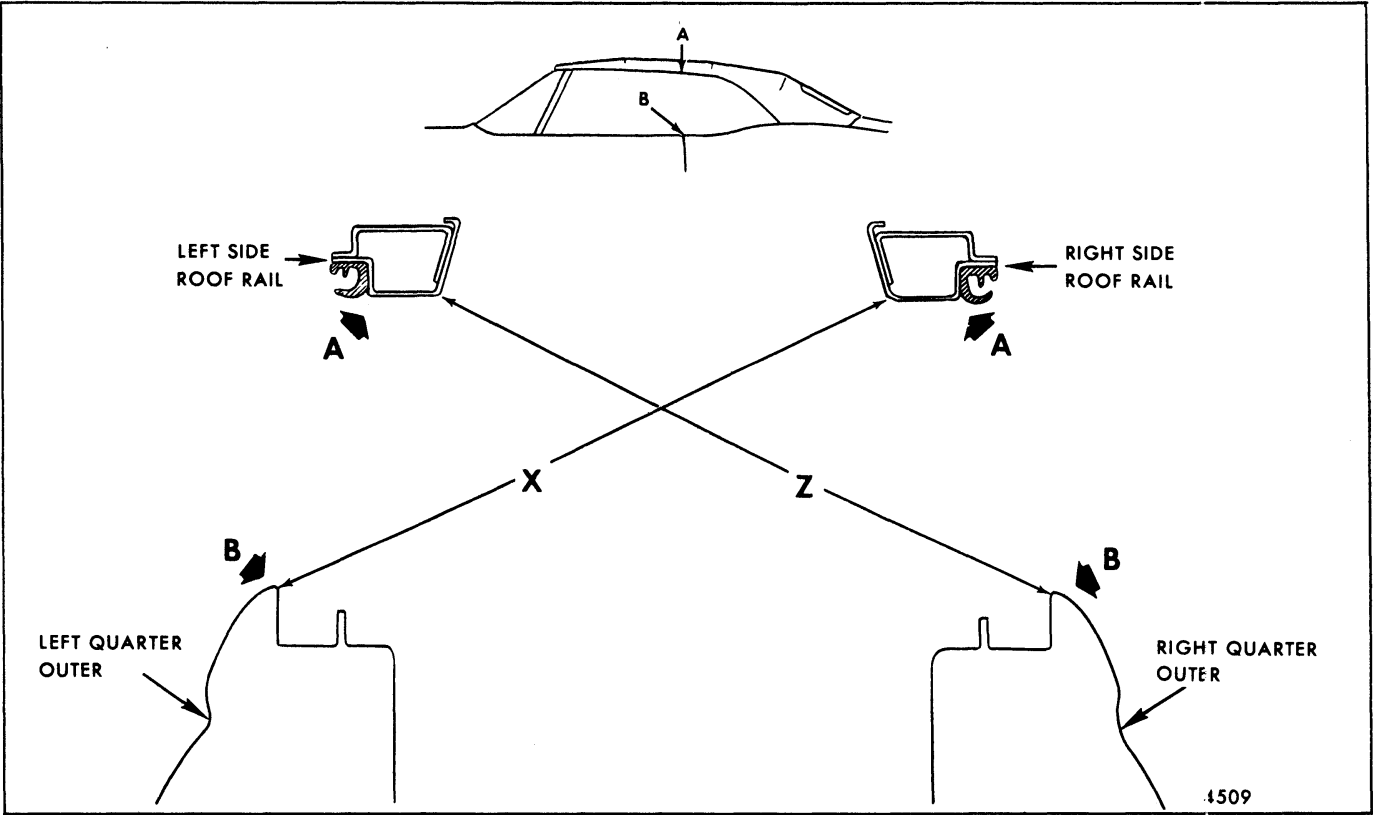


Fig. 8-79-Diagonal Check of Side Roof Rails

## SECTION 9

**SEATS**

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## FRONT AND REAR SEATS

### FRONT SEATS - INTRODUCTION

Figures 9-1 and 9-2 illustrate the various types of seats used in the 1973 models.

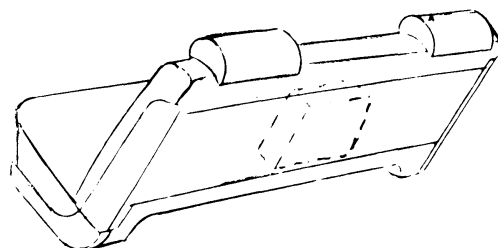
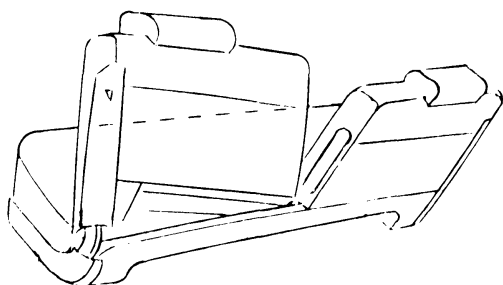
**NOTE:** In some portions of the Seat Section, removal and installation figure references for the various types of seats will be shown under the procedure

title. Refer to the illustration(s) for the type of seat being serviced.

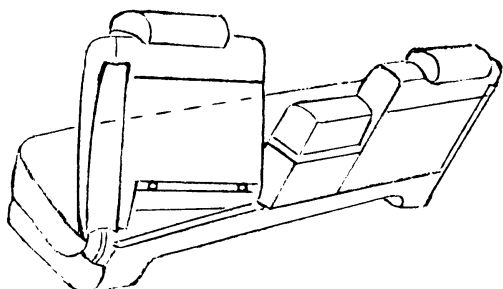
### FULL WIDTH, 60-40, 50-50 AND 40-40 FRONT SEATS

All front seats except bucket seats (Fig. 9-1) incorporate front seat back head restraints on the drivers and

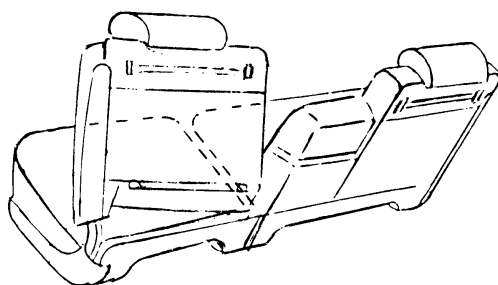




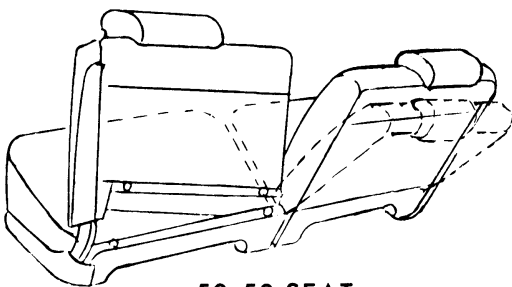
**FULL WIDTH BENCH SEATS  
BUILT IN CENTER ARM REST-SOME STYLES**



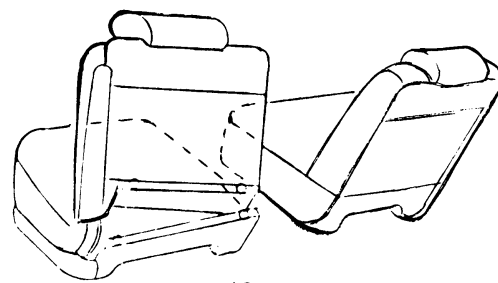
**FULL WIDTH NOTCH-DOWN  
BENCH SEAT**



**60-40 SEAT**



**50-50 SEAT  
(RECLINING PASSENGER BACK)**



**40-40 SEAT**

**NOTE: TWO-DOOR STYLE FOLDING BACKS SHOWN  
FOUR-DOOR STYLES HAVE NON-FOLDING BACKS**

**4912**

Fig. 9-1-Types of Front Seat (All Except Bucket Seats)

passengers seat back. The head restraints are designed so they cannot be removed from the seat back without first inserting a flat tool inside the head restraint support tube to release the lock clip; however, the head restraints can be raised or lowered for proper positioning.

All two-door style seats and station wagon folding second and third seats are equipped with positive acting seat back locks. On "B, C and E" body two-door styles the front seat back lock can be unlocked by operating the control lever (outboard side of seat back) rearward. On "A, F and X" body two-door styles the front seat back lock can be unlocked by operating the control lever (rear outboard corner of seat back) upward.

All front and rear seat cushions and backs incorporate formed foam pads, formed to fit the contours of the full panel seat back frame assembly and also the designed contour of the seat cushion. The 60-40 front seat consist of an individually controlled passenger seat (60 percent of front seat width) and an individually controlled driver seat (40 percent of front seat width).

The 50-50 front seat consist of a split front seat with both the driver and passenger half individually controlled. The passenger seat is equipped with a reclining seat back which can be reclined rearward approximately 20 degrees by lifting the front of the control lever located at the outboard side of the seat cushion. When the control lever is actuated upward the spring loaded reclining unit located in the right side of the cushion is released allowing the seat back to be pushed rearward or allow the spring loaded reclining unit to bring the seat back forward.

### BUCKET SEATS

All bucket seats shown in Figure 9-2, are the high seat back with integral head restraint type and incorporate formed seat cushion and back foam pads.

Two-door style bucket seats incorporate positive acting seat back locks. The locks are located at the rear, lower outboard corner of the seat back and are unlocked by lifting the lock handle.

### SHELL SWIVEL BUCKET SEAT

Shell swivel bucket seats are available for both the driver and passenger seat on some styles. The shell bucket swivels approximately ninety degrees towards the door opening to provide easier entrance and exit from the body. The control lever for the swivel mechanism is located at the outboard side of the seat. When the lever is pushed downward the swivel

mechanism unlocks and the seat can be turned towards the door opening. When the control lever is released the swivel mechanism will lock when the seat is in the forward position.

### CUSTOM COMFORT BUCKET SEAT

Custom comfort bucket seats are also available on some styles featuring adjustable reclining seat backs and adjustable lumbar support. The lower control knob at the right side of the seat controls the reclining seat back. When the knob is rotated forward backward the seat back pivots in the direction of knob rotation. The seat back can be moved approximately 7 degrees forward of normal position or 25 degrees rearward of normal position.

The upper control knob at the inboard side of the seat controls the adjustable lumbar support, when the knob is rotated forward or rearward it tightens or loosens a strap behind the seat back foam pad to provide the desired amount of support in the lumbar area of the back.

### SALON BUCKET SEAT

Salon bucket seats are available on some body styles featuring adjustable reclining backs. When the control knob, located at the outboard lower side of the seat back, is rotated forward or backward the seat back pivots in the direction of knob rotation. The seat back can be moved approximately 7 degrees forward of normal position or 25 degrees rearward of normal position.

### FRONT SEAT DEALER RELOCATION PROVISIONS

There are no provisions for either forward or rearward dealer relocation of front seats on 1973 styles.

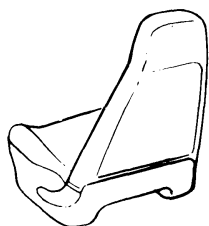
**NOTE:** DO NOT attempt to change the designed seat position by altering the designed seat adjuster-to-seat frame anchor provisions or seat adjuster-to-seat frame anchor provisions as it could affect the performance of the seat system.

### SEAT TORQUE SPECIFICATIONS

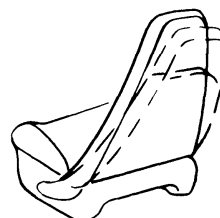
The following torque specifications should be used when servicing seat assemblies:

#### BOLT OR NUT LOCATION AND TORQUE - FT. LBS.

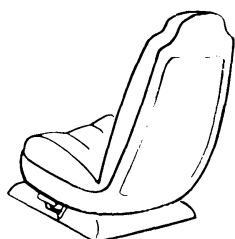
1. Seat Adjuster and Folding Seat Back-to-Floor Pan Bolts or Nuts - 12-18 ft. lbs.



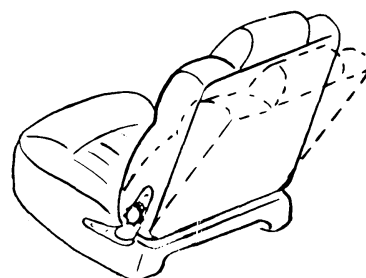
**STANDARD BUCKET  
SEAT**



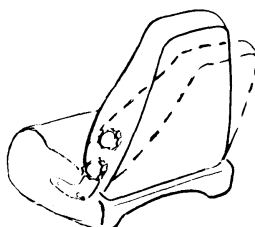
**BUCKET SEAT WITH  
ADJUSTABLE BACK**



**SWIVEL SHELL  
BUCKET SEAT**



**SALON BUCKET SEAT  
(RECLINING BACK)**



**CUSTOM COMFORT BUCKET SEAT (RECLINING BACK  
AND ADJUSTABLE LOMBAR SUPPORT)**

Fig. 9-2-Types of Bucket Seats

2. Seat Adjuster-to-Seat Frame Bolts - 12-18 ft. lbs.
3. Seat Back to Cushion Frame Bolts - 7-11 ft. lbs.
4. Seat Back Hinge Bolts - 7-11 ft. lbs.
5. Seat Back Lock Attaching Screws - 7-11 ft. lbs.
6. Seat Back Lock Striker and Inner Side Bar Stop - 12-18 ft. lbs.

**WARNING:** SEAT ATTACHING PARTS SUCH AS SEAT ADJUSTER-TO-FLOOR PAN BOLTS OR NUTS, SEAT ADJUSTER-TO SEAT FRAME BOLTS, SEAT CUSHION FRAME- TO-SEAT BACK FRAME BOLTS,

SEAT BACK LOCK BOLTS, SEAT BACK LOCK STRIKER, ETC. ARE IMPORTANT ATTACHING PARTS IN THAT THEY COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS. THEY MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THESE PARTS.

#### MANUALLY OPERATED SEAT ADJUSTER - TROUBLE DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Adjuster will not lock.	<ol style="list-style-type: none"> <li>1. Locking wire too tight.</li> <li>2. Adjuster lock bar spring disconnected or broke.</li> <li>3. Adjuster lock bar sticking or binding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust locking wire tension hook into another hole to loosen wire (see Figs. 9-7 and 9-8).</li> <li>2. Connect spring or install new spring (see Figs. 9-7 and 9-8).</li> <li>3. (a) Lubricate lock bar pivot (see Figs. 9-7 and 9-8).</li> <li>(b) If bar is binding eliminate cause of binding or replace adjuster.</li> </ol>
2. Adjuster will not unlock.	<ol style="list-style-type: none"> <li>1. Locking wire too loose or disconnected.</li> <li>2. Adjuster lock bar sticking or binding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust locking wire tension hook into another hole to tighten wire. Connect locking wire to adjusters.</li> <li>2. (a) Lubricate lock bar pivot.</li> <li>(b) If bar is binding eliminate cause of binding or replace adjuster.</li> </ol>

**MANUALLY OPERATED SEAT ADJUSTER - TROUBLE DIAGNOSIS CHART**

CONDITION	APPARENT CAUSE	CORRECTION
3. When left adjuster locks right adjuster is between lock positions.	1. Right adjuster either rearward of forward of left adjuster.	1. Loosen adjuster to floor pan bolts or nuts - move one adjuster forward or rearward as far as possible and the other adjuster the opposite direction.
4. Seat hard to move forward or rearward.	1. Adjuster(s) improperly lubricated.  2. Adjuster(s) binding due to bent or damaged channels.  3. Adjusters not in parallel alignment with each other.	1. Lubricate adjuster channels with Lubriplate AAW or equivalent.  2. Replace adjuster.  3. Loosen floor pan attaching bolts or nuts, align adjusters parallel on floor pan and retighten bolts or nuts.

**POWER OPERATED SIX-WAY SEAT ADJUSTER MECHANICAL DIAGNOSIS CHART**

**NOTE:** If it is apparent or suspected that the trouble is in the electrical system refer to "Electrical Section - Power Seats - Diagnosis Chart".

CONDITION	APPARENT CAUSE	CORRECTION
1. Horizontal operation of seat not smooth (jerky) - apparent hard operation.	1. Improper lubrication of adjuster shoes and channels.  2. Adjuster horizontal actuator gear too tight to rack gear.  3. Adjuster shoes too tight in upper channel.	1. Lubricate adjuster upper channel and plastic shoes.  2. See "Horizontal Actuator Adjustment".  3. Install new shoes on adjuster lower channel.
2. Horizontal chuck or looseness	1. Horizontal actuator improperly adjusted to rack gear.	1. See "Horizontal Actuator Adjustment".

**POWER OPERATED SIX-WAY SEAT ADJUSTER MECHANICAL DIAGNOSIS CHART (Cont'd.)**

CONDITION	APPARENT CAUSE	CORRECTION
3. One adjuster will not operate horizontally.	1. Horizontal drive cable disconnected or damaged.  2. Horizontal actuator inoperative.	1. Check horizontal drive cables, replace if damaged.  2. Replace horizontal actuator assembly.
4. One adjuster will not operate vertically.	1. Vertical drive cable disconnected or damaged.  2. Vertical gear nut inoperative.	1. Check vertical drive cables, replace if damaged.  2. Replace vertical actuator assembly.
5. Both adjusters will not operate horizontally and/or vertically.	1. Inoperative horizontal and/or vertical solenoid in transmission.  2. Damaged, broken or inoperable solenoid plunger, shaft, dog, dog spring, gear or drive gear (see Fig. 9-23).	1. See "Electrical Section - Checking the Solenoid".  2. Replace damaged, broken or inoperable solenoid part with new part.
6. Vertical chuck or looseness.	1. Excessive clearance at vertical gear nut tension spring.	1. Grind down top at vertical gear nut shoulder nut 1/64" to 3/64" maximum.

**FRONT SEAT ADJUSTMENTS****At Floor Pan Attachment**

On both manual and power operated seats a small amount of fore and aft or side adjustment is available at the seat adjuster-to-floor pan attaching bolts to provide proper alignment of the seat assembly or alignment of the seat adjusters with each other.

This adjustment can be used to help correct the following conditions:

1. Hard or slow operation due to adjusters not being parallel with each other.

2. Passenger side of manually operated seat must be moved forward or rearward slightly to engage in locked position due to one adjuster being forward or rearward of the other.

3. Seat assembly slightly too far to right or left.

**Adjuster Locking Wire Adjustment - Full Width Manually Operated Seats**

The tension of the locking wire extending between the adjusters can be adjusted to provide proper locking action of both adjusters, particularly the right (passenger side) adjuster. To tighten or loosen the locking wire, disengage locking wire tension hook

from hole in seat frame and relocate hook in one of adjacent holes (see Fig. 9-7 or 9-6). This adjustment can be used to correct the following conditions:

1. Right (passenger side) adjuster does not lock or lock bar is not fully engaged in lock position due to locking wire being too tight. To correct, loosen tension on locking wire.
2. Right (passenger side) adjuster does not unlock due to locking wire too loose. To correct, tighten tension on locking wire.

### Power Six-Way Seat Adjuster Horizontal Actuator Adjustment

With seat adjuster assembly installed on seat or seat assembly installed in body horizontal movement (chucking) can be corrected by adjusting the horizontal actuator and pinion gear in tight to the adjuster lower track rack gear as follows:

1. Operate seat full "up" position and approximately 3/4 full forward position.
2. Loosen horizontal actuator attaching screws (see Fig. 9-3). Using a large screwdriver, inserted as shown in Figure 9-3 apply outward pressure on horizontal actuator (sufficient to equal 15 to

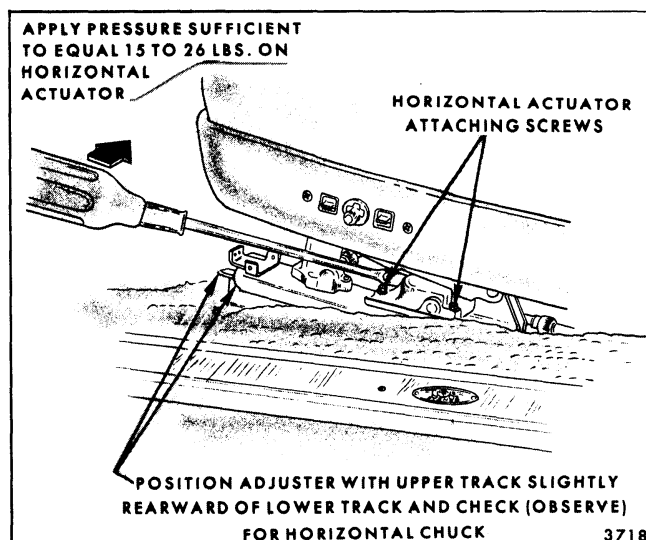


Fig. 9-3-Horizontal Actuator Adjustment - Power Six-Way Seat

25 lbs. on horizontal actuator) and at the same time energize horizontal switch to move seat fore and aft slightly; this helps seat the horizontal actuator pinion gear teeth tight to the lower track rack gear teeth and eliminate any free play between gear teeth. While maintaining outward pressure against horizontal actuator, tighten actuator attaching screws.

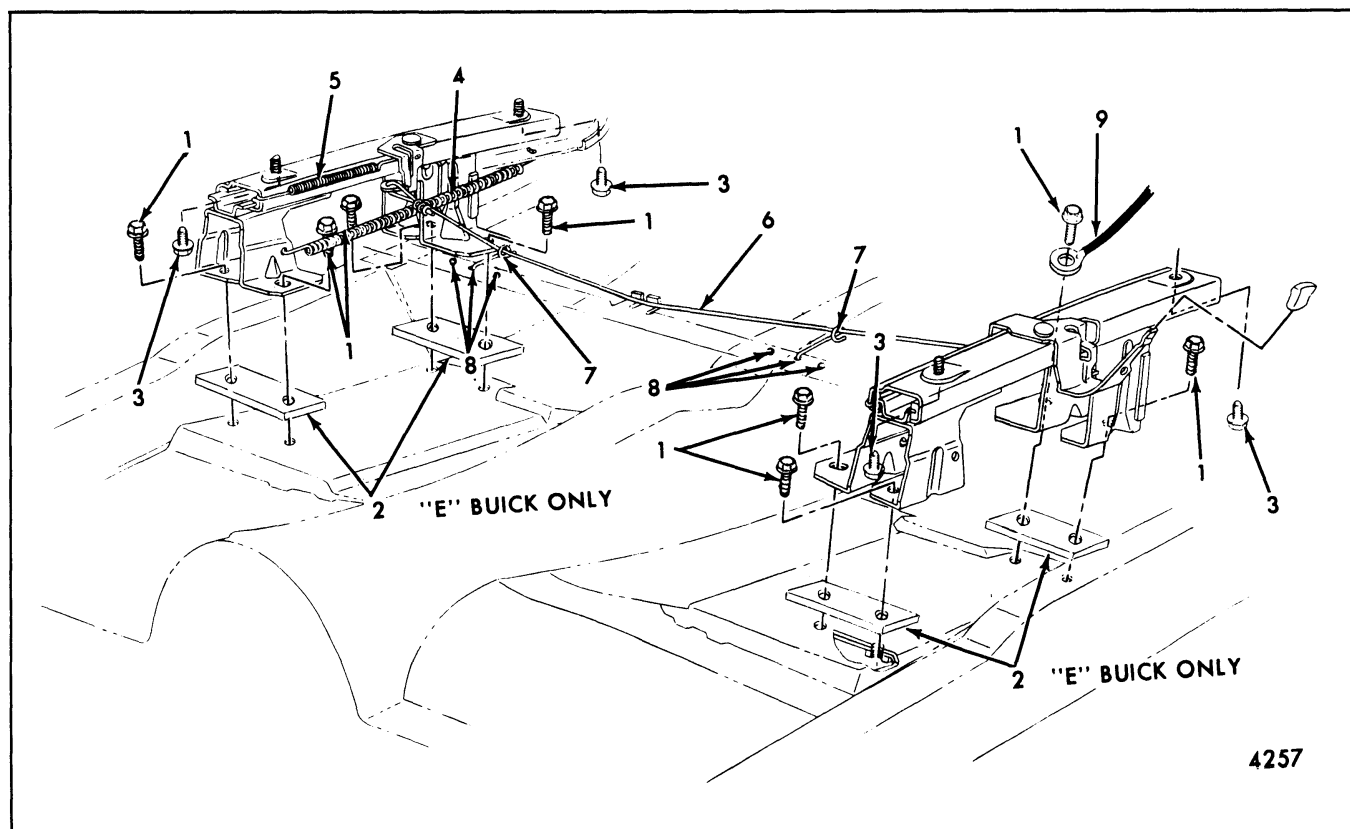


Fig. 9-4-Front Seat Adjuster Control Knob - Removal - Side Control Knob Shown - Front Control Knob Typical

## MANUALLY OPERATED SEAT ADJUSTER CONTROL ARM KNOB - All Styles with Manually Operated Seat Adjusters

Manually operated seat adjuster control arm knobs are a press fit on the adjuster control arm. When replacing a manually operated seat adjuster with the control arm knob it will be necessary to remove the knob from the old adjuster and install it on the new adjuster or install a new knob.

**NOTE:** Control arm knobs can generally be removed and reinstalled several times without losing adequate retention. If removing or installing a control knob on a trimmed seat assembly, place a protective cover over trim material in area of knob (see Figs. 9-4 and 9-5).

### Removal

Using a heavy body spoon, a long drift pin and a piece of wood as a fulcrum, as shown in Figure 9-4, carefully remove knob from adjuster control arm.

**NOTE:** On seats with the control arm at the side of the seat, use caution not to push drift pin down onto rocker panel sill plate. On seats with the control arm at the front of the seat, place a support under control arm to prevent bending arm.

### Installation Equipment

The following equipment is required to install seat adjuster control knob.

1. One four inch "C" clamp.

**NOTE:** Swivel pad of "C" clamp should rotate freely. Where necessary add a drop or two of oil in swivel pad.

2. One round rubber plug (Part No. 4802102 or equivalent) to fit over "C" clamp swivel pad to help prevent swivel pad from slipping off control knob or damaging control knob.
3. One 1/8 inch diameter sheet metal screw approximately one inch long or a drift pin.

**NOTE:** Round off sharp point of screw to prevent possible damage to seat trim.

### Installation Procedure

1. Place pencil mark on seat adjuster control arm, one inch from end of arm as a guide for determining when knob is fully installed.
2. Place seat adjuster control knob in position on control arm and start knob on by hand pressure making certain knob is started on straight.

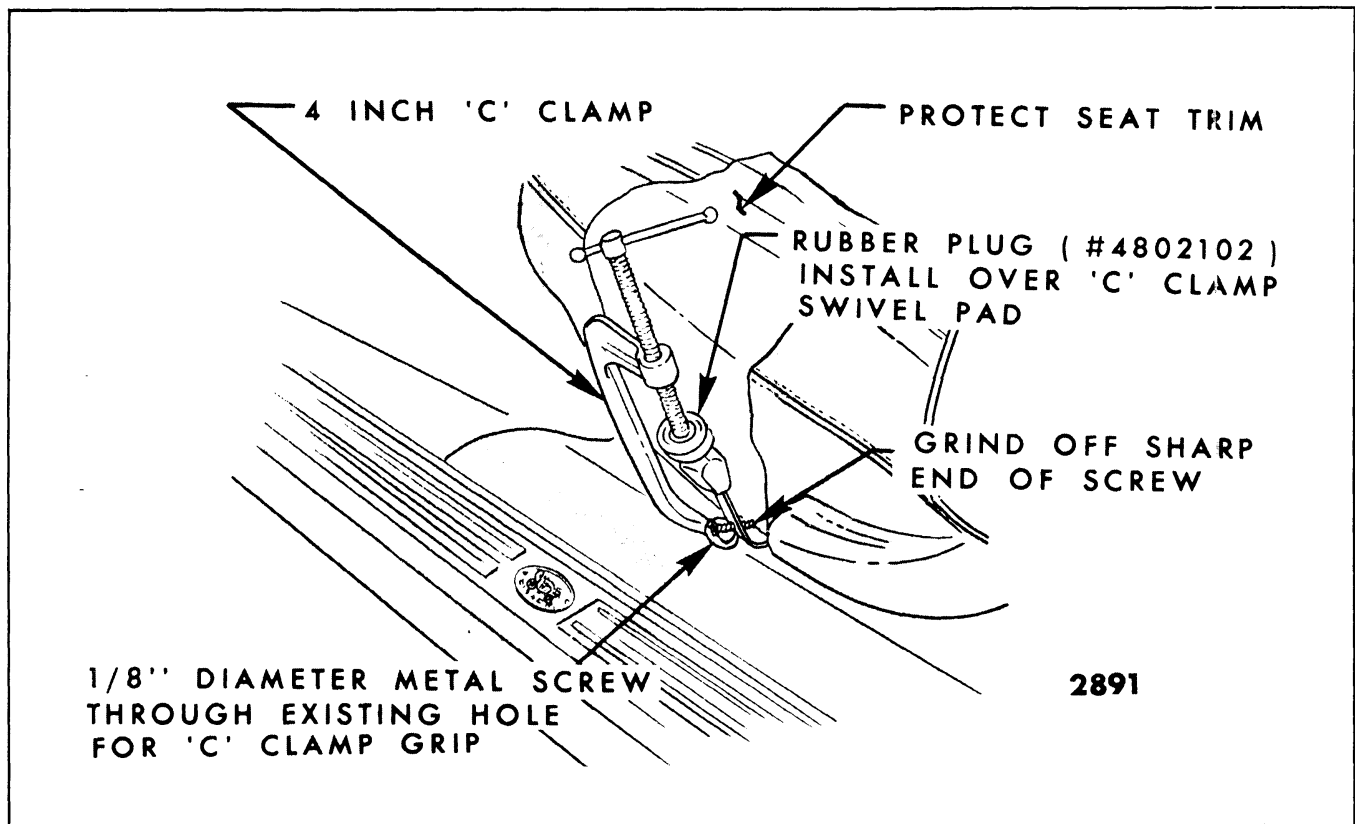


Fig. 9-5-Front Seat Adjuster Control Knob - Installation - Side Control Knob Shown - Front Control Knob Typical



**NOTE:** Install knob so that "gate" mark (on one face of knob) is facing seat and is not visible. On seats with the control arm at the front of the seat, install knob so that gate mark is facing down.

3. Insert sheet metal screw or drift pin in hole provided in adjuster control arm and place "C" clamp in position as shown in Figure 9-5. Use round rubber plug (Part No. 4802102 or equivalent) over swivel pad of "C" clamp to prevent damage to knob and to prevent "C" clamp swivel pad from slipping off knob.

4. Carefully press knob on control arm with "C" clamp until bottom edge of knob is down to mark (one inch below edge of arm).

## FRONT SEAT ASSEMBLY - Manual and Power Operated Two-Way and Six-Way Seats

### Description

All seat assemblies are secured to the floor pan by either nuts installed on floor pan anchor plate studs or bolts installed into anchor nuts or plates in the floor pan.

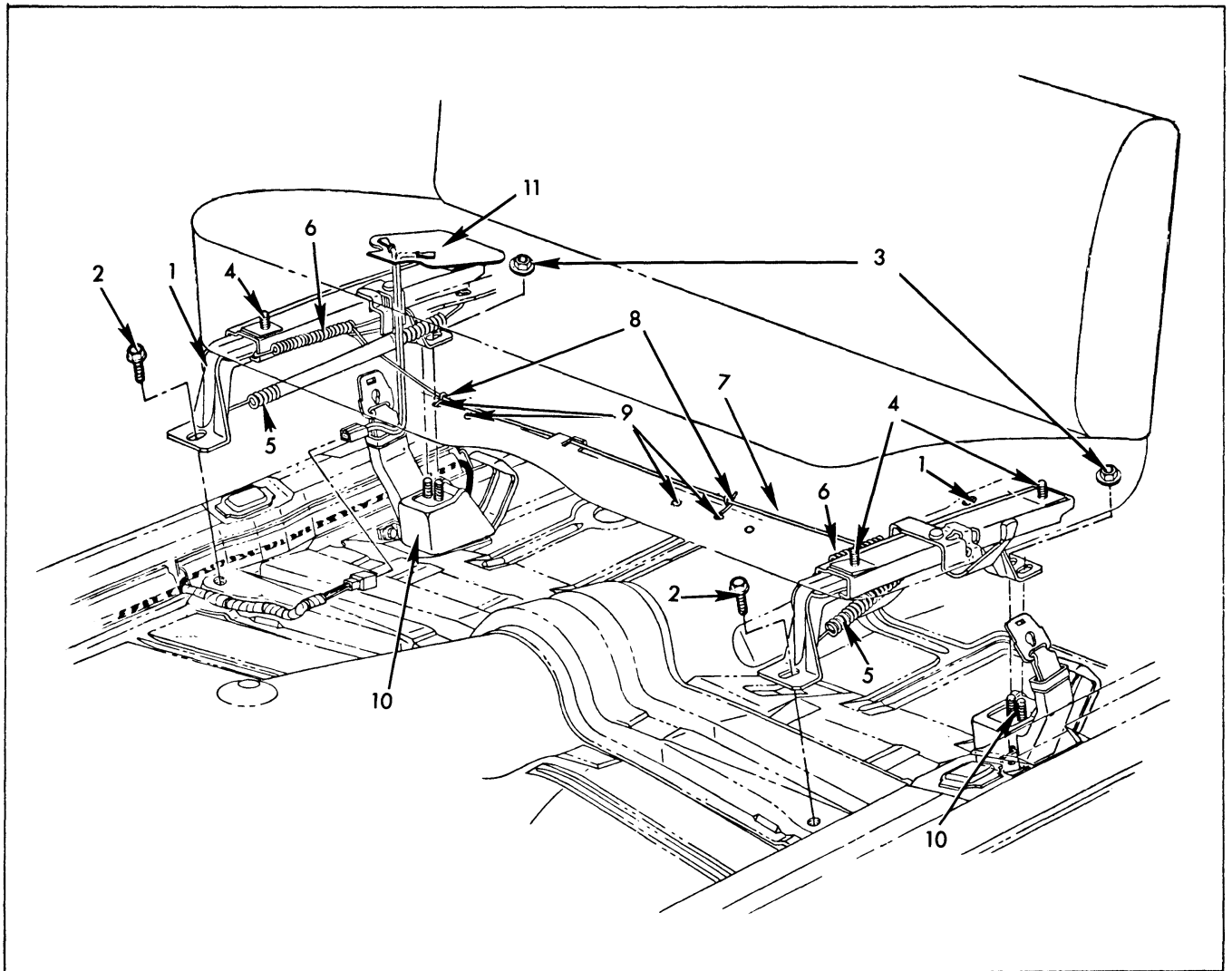
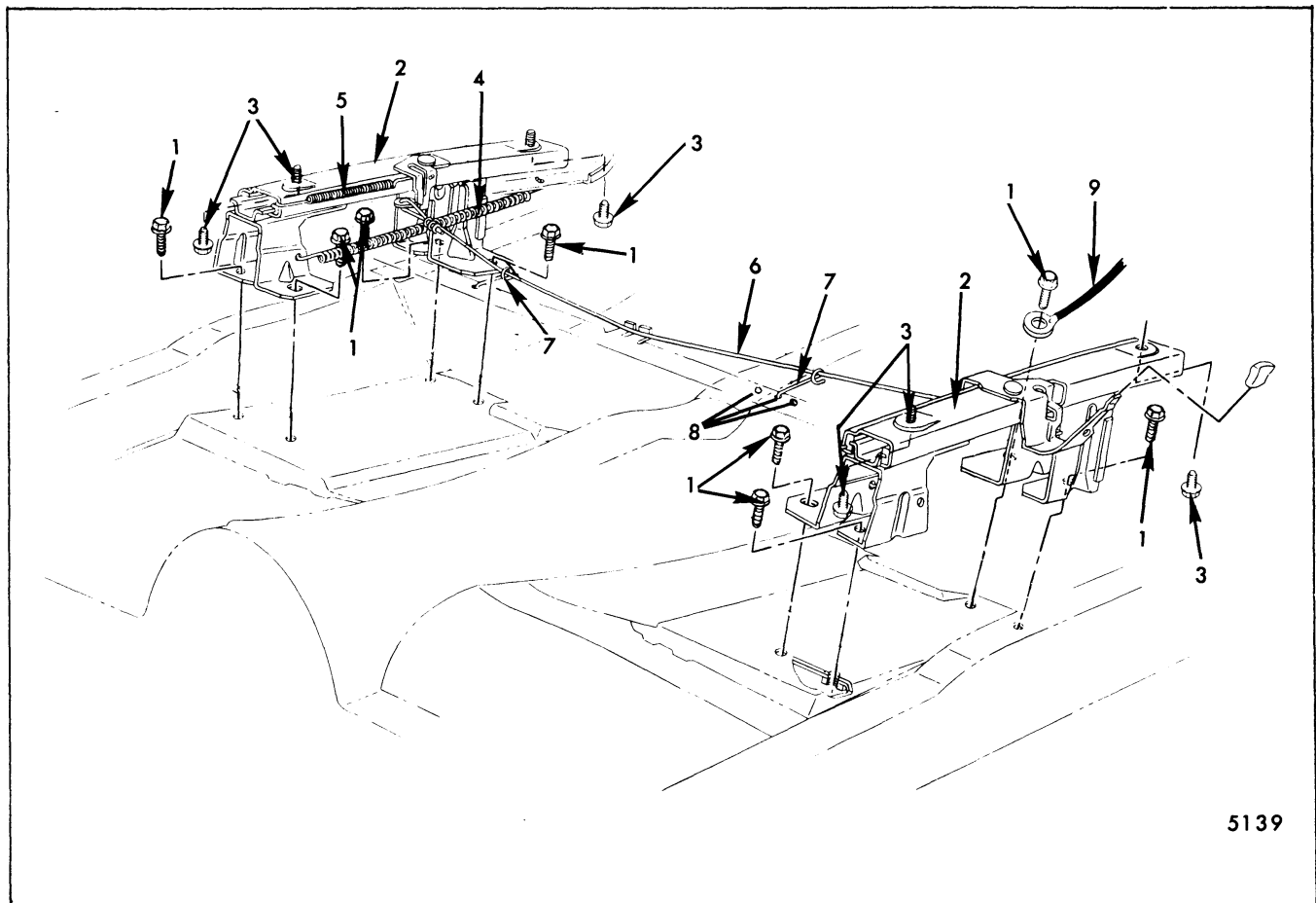


Fig. 9-6-Front Seat Adjusters - "A" Body Manually Operated Full Width Seats

- |  |                             |   |  |
|--|-----------------------------|---|--|
| 1. Adjuster Assembly                   | 5. Adjuster Assist Spring   | 8. Locking Wire Tension Hooks                 | 10. Lap Belt Retractor Assembly                    |
| 2. Adjuster-to-Floor Pan Front Bolts   | 6. Adjuster Lock Bar Spring | 9. Tension Hook Adjusting Holes in Seat Frame | 11. Lap Belt Warning Buzzer and Lamp Sensor Switch |
| 3. Adjuster-to-Lap Belt Retractor Nuts | 7. Adjuster Locking Wire    |   |  |
| 4. Adjuster-to-Seat Frame Bolts        |                             |   |  |



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Fig. 9-7-Front Seat Adjusters - "B, C and E" Body Manually Operated Full Width Seats

- |   |                             |                               |   |
|---|-----------------------------|-------------------------------|---|
| 1. Adjuster-to-Floor Pan Attaching Bolts  | 4. Adjuster Assist Spring   | 6. Adjuster Locking Wire      | 8. Tension Hook Adjusting Holes in Seat Frame |
| 2. Adjuster Assembly                      | 5. Adjuster Lock Bar Spring | 7. Locking Wire Tension Hooks | 9. Seat Frame-to-Adjuster Ground Strap        |
| 3. Adjuster-to-Seat Frame Attaching Bolts |                             |                               |   |

All front seats incorporate a lap belt warning light and buzzer sensor switch on the passengers side of the seat with a lead wire connector under the seat.

**NOTE:** All electrically operated seats and seats equipped with cigarette lighter, courtesy lamps etc. have a ground wire secured to the seat frame and under the seat adjuster rear attaching bolt or nut.

The manually operated front seat assemblies incorporate manually operated seat adjusters to provide fore and aft movement of the seat. When the control lever, located at the front or side of the seat is actuated the seat adjusters unlock, permitting horizontal travel of the seat. When the seat is in the desired position and the locking lever is released the seat is locked.

The power operated two-way and six-way seat adjusters are actuated by a 12 volt, reversible, shunt wound motor with a built-in circuit breaker. The motor is energized by a toggle-type control switch installed in the left seat side panel or in the left door arm rest.

On six-way power operated seats the seat operating mechanism has a transmission assembly which incorporates three solenoids and six drive cables to the seat adjusters. One solenoid controls the vertical movement of the front of the seat, the second solenoid controls the horizontal movement of the seat and the third solenoid controls the vertical movement of the rear of the seat. When the control switch is actuated, a double contact in the switch first energizes the correct solenoid which engages the solenoid

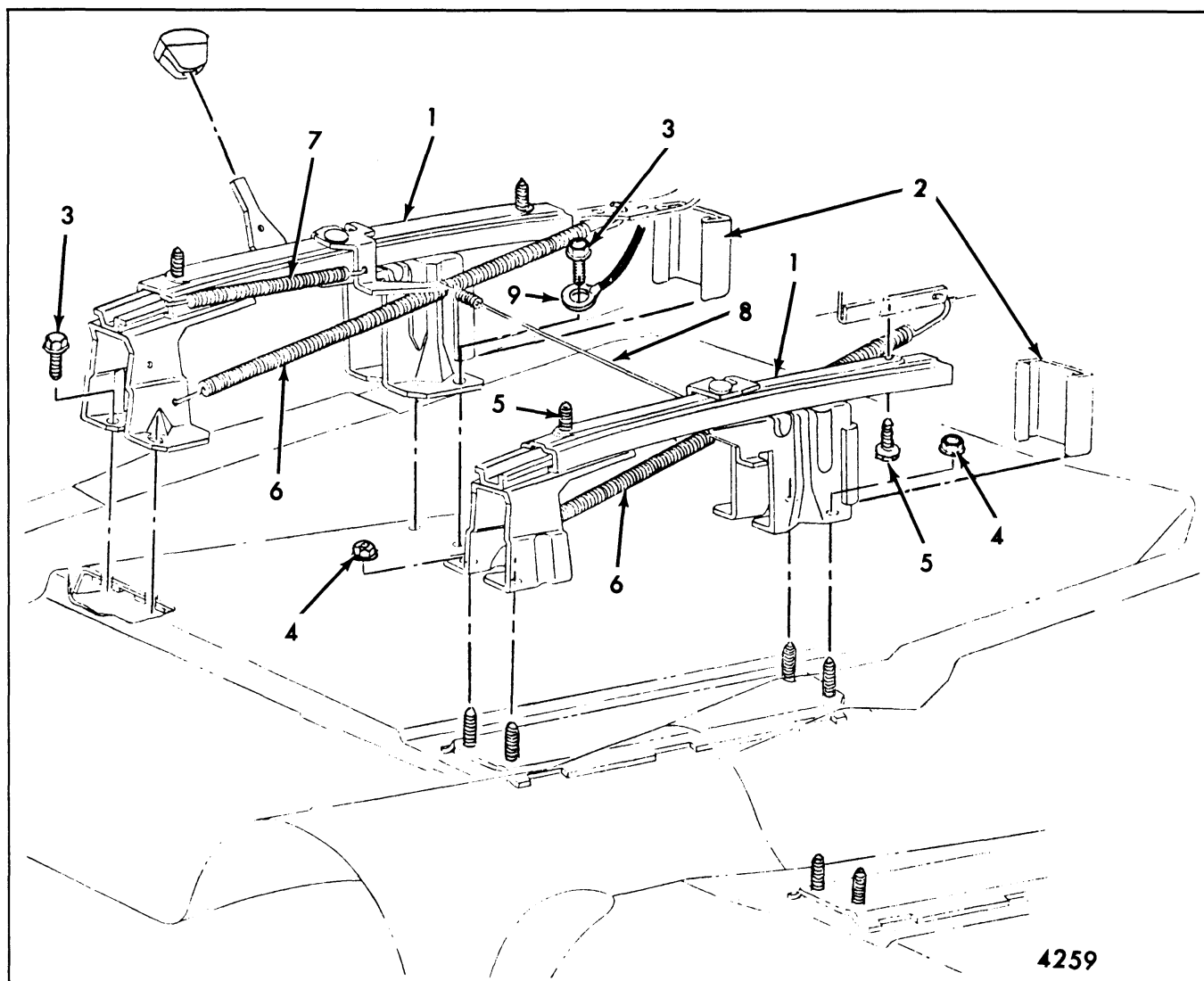


Fig. 9-8-60-40, 50-50 and 40-40 Front Seat Manual Adjusters (60-40 Passenger Side Shown-Driver Side Typical)- 50-50 and 40-40 Adjusters Typical

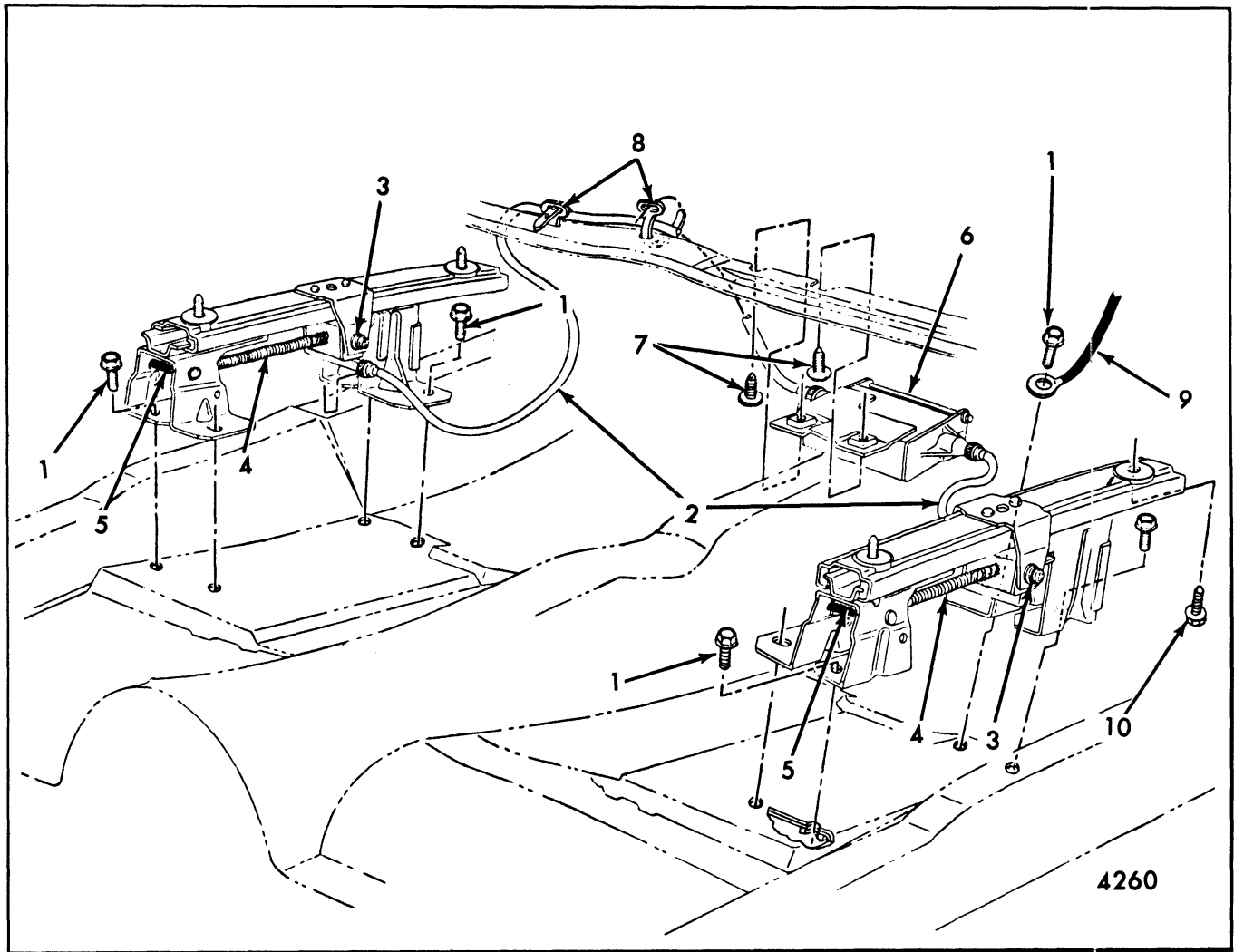
- |                                      |                                     |                             |                          |
|--------------------------------------|-------------------------------------|-----------------------------|--------------------------|
| 1. Adjuster Assembly                 | 4. Inner Adjuster-to-Floor Pan Nuts | 6. Adjuster Assist Spring   | 8. Adjuster Locking Wire |
| 2. Adjuster Rear Pedestal Covers     | 5. Adjuster-to-Seat Frame Bolts     | 7. Adjuster Lock Bar Spring | 9. Ground Strap          |
| 3. Outer Adjuster-to-Floor Pan Bolts |                                     |                             |                          |

plunger with the driving gear dog, then energizes the motor. The driving gear rotates the drive cables and operates both adjusters. When the adjusters reach their limit of travel, the drive cables stop their rotating action and torque is absorbed by the rubber coupler connecting the motor and transmission. When the control switch is released, a return spring returns the solenoid plunger to its original position disengaging it from the driving gear dog.

### SEAT ASSEMBLY - Manual and Power Operated Seats - All Styles

Refer to appropriate illustrations below for the type of seat being serviced.

1. Fig. 9-6-"A" Body Manually Operated Full Width Seat
2. Fig. 9-7-"B, C, E and X" Body Manually Operated Full Width Seat
3. Fig. 9-8, 60-40, 50-50 and 40-40 Manually Operated Seat
4. Fig. 9-9-Power Horizontal (Two-Way) Full Width Seat
5. Fig. 9-10-Power Horizontal 60-40, 50-50 and 40-40 Drivers Seat



- |   |   |   |  |
|---|---|---|--|
| 1. Seat Adjuster-to-Floor Pan Attaching Bolts | 3. Adjuster Horizontal Gear Nut and Shoulder Screws | 6. Electric Motor                       | 9. Seat Frame-to-Adjuster Ground Strap     |
| 2. Horizontal Drive Cables                    | 4. Adjuster Jack Screw                              | 7. Motor-to-Seat Frame Attaching Screws | 10. Adjuster-to-Seat Frame Attaching Bolts |
|   | 5. Jack Screw Support Pin                           | 8. Horizontal Drive Cable Straps        |  |

6. Fig. 9-11, 60-40, 50-50 and 40-40 Power Six-Way Drivers Seat
7. Fig. 9-12-Power Six-Way Full Width Seat ("A" Body Shown - "B, C and E" Bodies Typical)
8. Fig. 9-13-"A" Body Manually Operated Bucket Seat (Except Swivel Bucket)
9. Fig. 9-14-Swivel Bucket Seat
10. Fig. 9-15-Power Six-Way Bucket Seat

## Removal and Installation

1. Where the front inner seat belts go through the

seat assembly, remove seat belt-to-floor pan inner anchor plate attaching bolt.

2. Where necessary to gain access to adjuster-to-floor pan attaching bolts or nuts, remove door sill plates and turn back floor mat or carpeting.
3. Operate seat to full forward position. If six-way power seat is operable, operate seat to full "forward" and "up" positions. At rear of adjusters, remove adjuster-to-floor pan rear attaching nuts or bolts (see Illustration).
4. Operate seat to full rearward position. Remove adjuster-to-floor pan front attaching nuts or bolts. On seats incorporating any electrical equipment, tilt seat assembly rearward suffi-

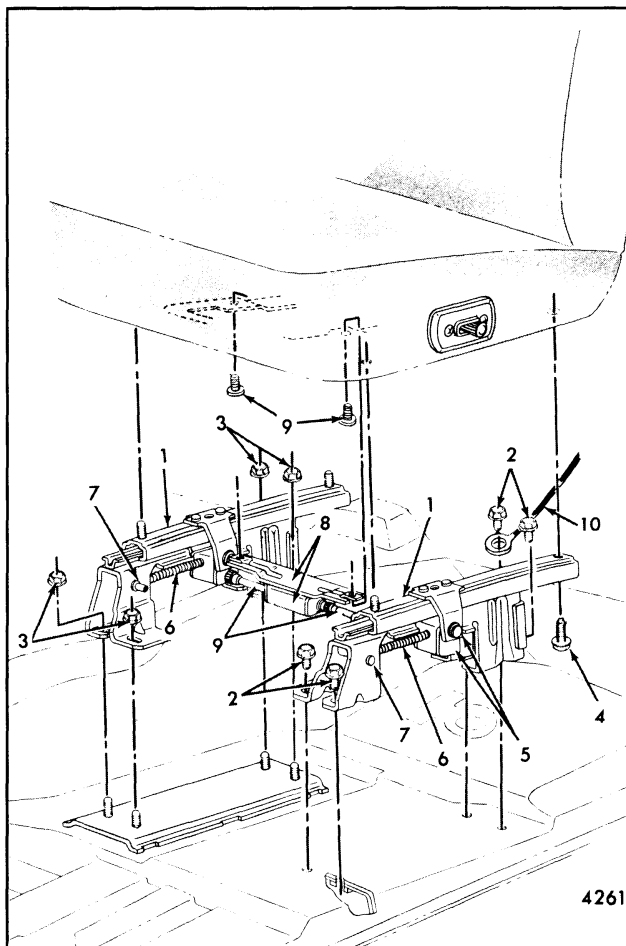


Fig. 9-10-Power Operated Horizontal Adjuster - 60-40, 50-50 and 40-40 Seats

- |   |   |
|---|---|
| 1. Adjuster Assembly                                | 7. Jack Screw Support Pin                       |
| 2. Adjuster-to-Floor Pan Attaching Bolts            | 8. Electric Motor and Support                   |
| 3. Adjuster-to-Floor Pan Attaching Nuts             | 9. Motor Support-to-Seat Frame Attaching Screws |
| 4. Adjuster-to-Seat Frame Attaching Bolts           | 10. Seat Frame-to-Adjuster Ground Strap         |
| 5. Adjuster Horizontal Gear Nut and Attaching Screw |   |
| 6. Adjuster Jack Screw                              |   |

ciently to disconnect wire connectors under seat. All two-door styles have a lap belt warning light and buzzer sensor switch connector under passengers seat. With aid of a helper, remove seat assembly from body.

- Prior to installing seat assembly, check that both seat adjusters are parallel and "in phase" with each other. In the event the adjusters are "out of phase" (one adjuster reaches its maximum horizontal or vertical travel in a given direction before the other adjuster) phase adjusters as de-

scribed in Step 5 under "Front Seat Adjuster Assembly - Removal and Installation.

- To install seat assembly, reverse removal procedure. On seats with electrical equipment, connect feed wire connectors under seat, also make sure ground wire is secured under seat adjuster rear attaching bolt or nut.

**NOTE:** Tighten seat adjuster to floor pan attaching bolts or nuts 12 to 18 ft. lbs. Check operation of seat assembly to full limits of travel. On two-door styles equipped with electric seat back locks check operation of both seat back locks.

### FRONT SEAT ADJUSTER ASSEMBLY - Manual and Power Operated - All Styles (Except Swivel Bucket)

Refer to appropriate illustrations below for the type of seat being serviced.

- Fig. 9-18-Manual Seat Adjusters - Full Width Seat
- Fig. 9-19-Manual Seat Adjusters - Bucket Seat (Except Swivel Bucket)
- Fig. 9-8-Manual Seat Adjusters - 60-40, 50-50 and 40-40 Seats
- Fig. 9-17-Power Six-Way Seat Adjusters - 60-40, 50-50, 40-40 Seats (Bucket Seat Typical)

### Removal and Installation

- Remove front seat assembly with adjusters attached, as previously described, and place upside-down on a clean protected surface.
- On manually operated seat adjusters remove seat adjuster assist spring from adjuster being removed. Squeeze hooked end of seat adjuster locking wire together and slide retaining spring back over hump in locking wire and remove locking wire from adjuster.
- On power operated full width seats, disconnect drive cables at adjuster being removed, squeeze oblong connector to detach. On power operated 60-40, 50-50, 40-40 or bucket seats remove bolt securing motor and transmission support to adjuster being removed (see Fig. 9-17).
- Remove adjuster-to-seat bottom frame front and rear attaching bolts and remove seat adjuster from seat.
- To install, reverse removal procedure. If a

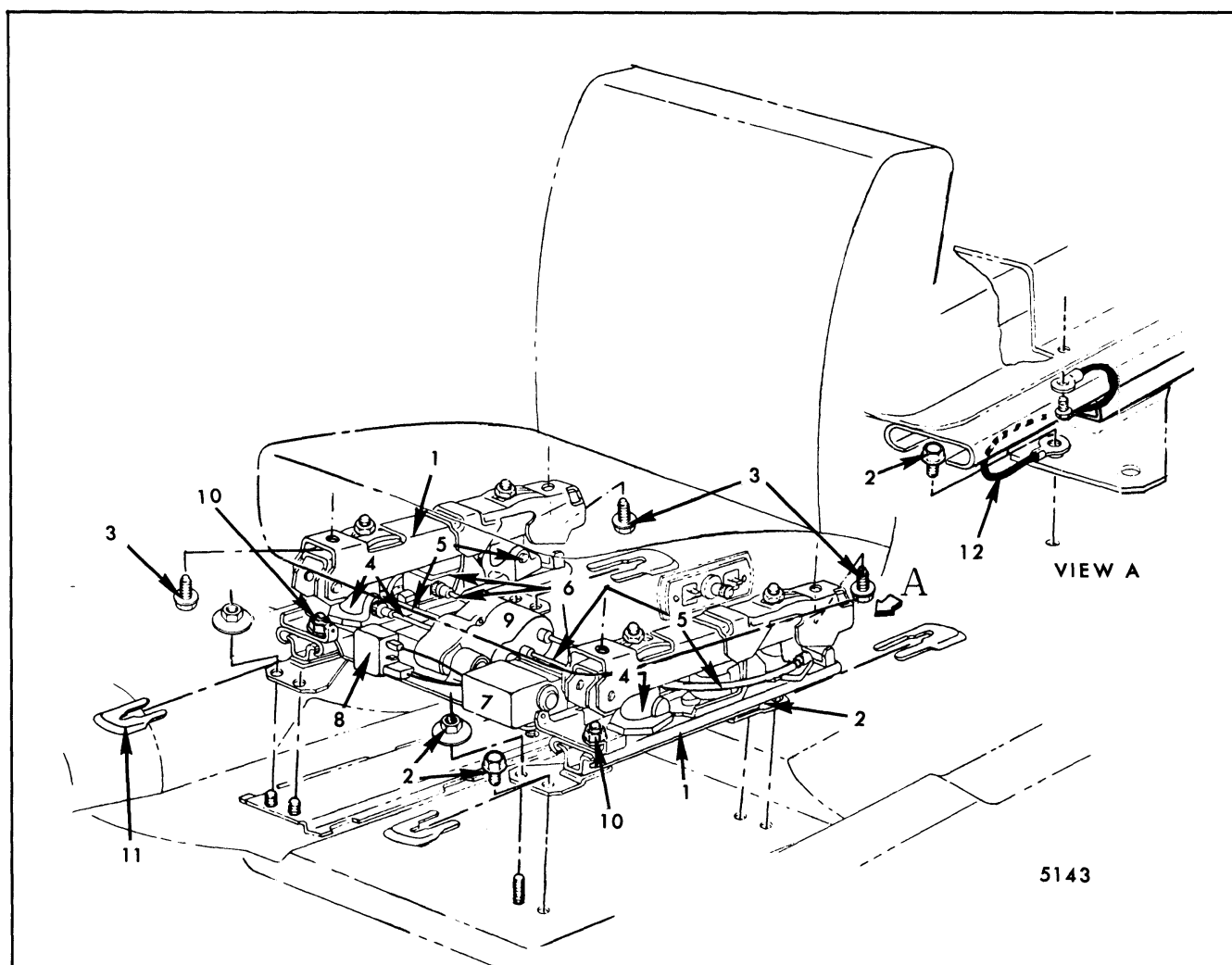


Fig. 9-11-60-40, 50-50, 40-40 and Bucket Six-Way Power Adjusters (60-40 Drivers Seat Shown - Passenger Seat, 50-50 and 40-40 Seats Typical)

- |   |  |   |   |
|---|--|---|---|
| 1. Adjuster Assembly                                | 5. Rear Vertical Gear Nut and Drive Cables | D. Passengers Outboard Side - Blue              | 9. Transmission Assembly                |
| 2. Adjuster-to-Floor Pan Bolts and Nuts             | A. Drivers Inboard Side - Blue             | 6. Horizontal Actuator and Drive Cables (Black) | 10. Motor and Transmission Support Nuts |
| 3. Adjuster-to-Seat Frame Bolts                     | B. Drivers Outboard Side - Green           | 7. Electric Motor Assembly                      | 11. Carpet Retainers                    |
| 4. Front Vertical Gear Nut and Drive Cables (Black) | C. Passengers Inboard Side - Green         | 8. Motor Control Relay                          | 12. Seat Ground Wire                    |

manual adjuster with control arm is being replaced, install new adjuster control knob as described under "Manually Operated Seat Adjuster Control Arm Knob".

**NOTE:** When installing manually operated seat adjusters the right and left seat adjuster sliding mechanism should be in same relative position when attaching adjuster to seat bottom frame. Tighten seat adjuster-to-seat frame attaching bolts 12 to 18 ft. lbs.

After installing adjuster to seat frame, check operation of adjusters. If on full width seats the adjusters do not lock or unlock satisfactorily when control handle is operated, disengage locking wire retainer from hole in seat bottom frame and engage retainer in one of adjacent holes to obtain proper tension in wire (see Fig. 9-18).

When installing power operated seat adjusters, check that both adjusters are parallel and "in phase" with each other. In the event the adjusters are "out of

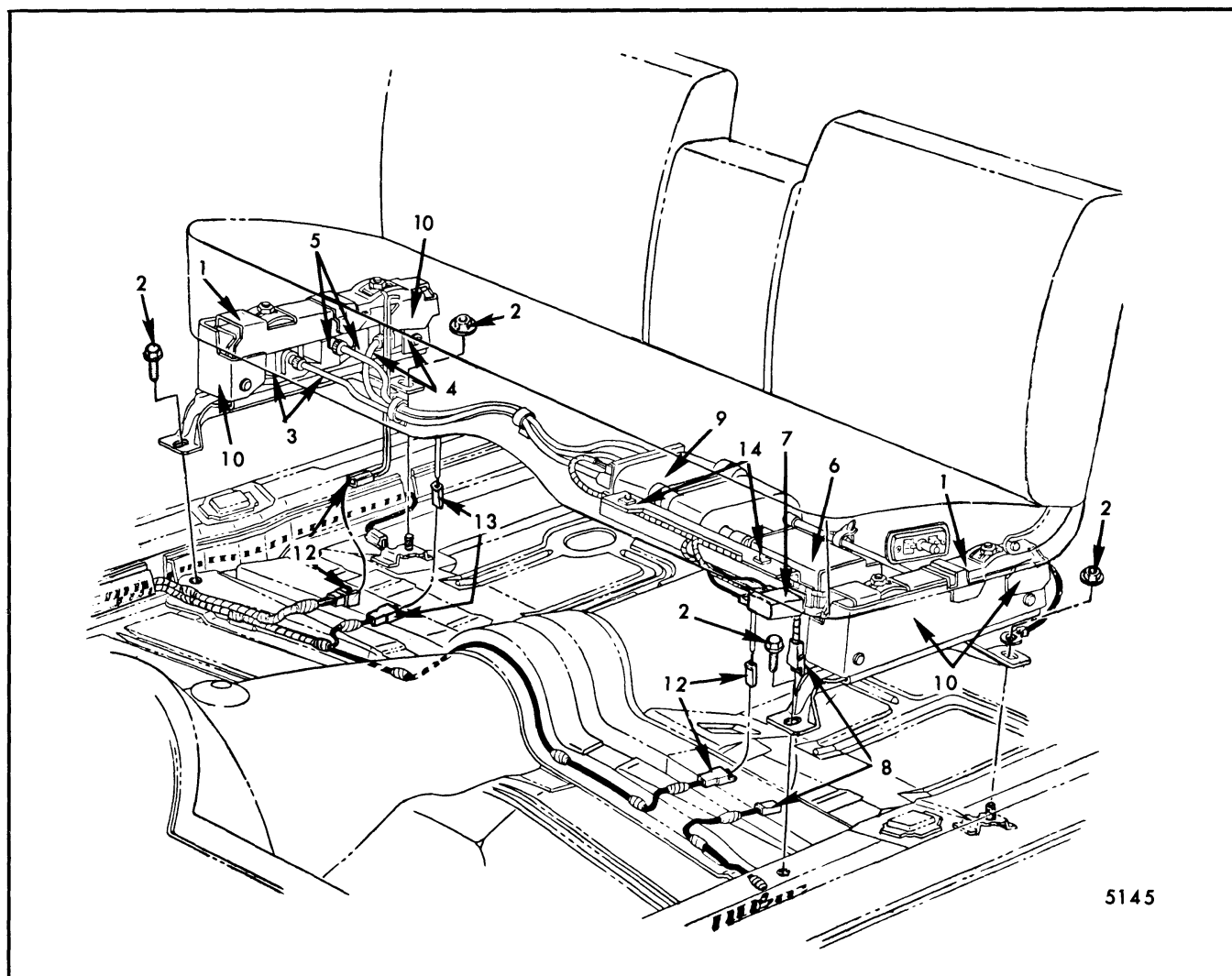


Fig. 9-12-Power Six-Way Full Width Seat ("A" Body Shown - "B, C and E" Bodies Typical)

- |   |   |   |  |
|---|---|---|--|
| 1. Adjuster Assembly                              | 5. Horizontal Actuator and Drive Cables (Black) | 10. Adjuster Track Covers - Lower and Upper | 13. Lap Belt Warning Buzzer and Light Sensor Switch Wire Connector |
| 2. Adjuster-to-Floor Pan Bolts and Nuts           | 6. Electric Motor Assembly                      | 11. Seat Frame-to-Adjuster Ground Strap     | 14. Motor and Transmission Support Attaching Bolts                 |
| 3. Front Vertical Gear Nut and Drive Cables (Red) | 7. Motor Control Relay                          | 12. Electric Seat Back Lock Wire Connectors |  |
| 4. Rear Vertical Gear Nut and Drive Cables (Blue) | 8. Motor Feed Wire Connector                    |   |  |
|   | 9. Transmission Assembly                        |   |  |

phase" (one adjuster reaches its maximum horizontal or vertical travel in a given direction before the other adjuster) phase adjusters as follows:

1. Horizontal Travel - Operate seat control switch until one adjuster reaches full forward position. Detach horizontal drive cable from adjuster which has reached full forward position. Operate seat forward until other adjuster reaches full forward position; then, connect horizontal drive cable and check horizontal travel of seat.
2. Front or Rear Vertical Travel - Operate seat control switch until one adjuster has reached fully raised position at both front and rear vertical travel limits. Disconnect both front and rear vertical drive cables from adjuster which has reached the fully raised position. Operate seat control switch until other adjuster reaches the fully raised position at both front and rear vertical travel limits; then, connect previously removed front and rear vertical drive cables. Check vertical travel by operating adjusters

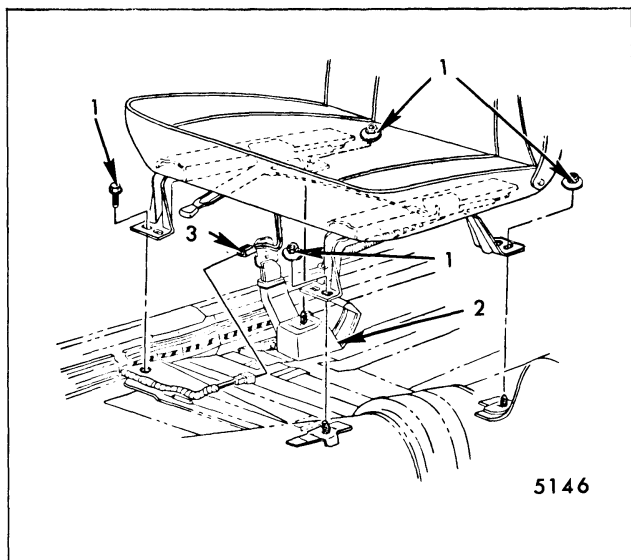


Fig. 9-13-"A" Body Manually Operated Bucket Seats, Except Swivel Buckets (Passenger Side Shown - Drivers Side Typical)

- |   |   |
|---|---|
| 1. Adjuster-to-Floor Pan Bolts and Nuts | 3. Lap Belt Warning Buzzer and Light Sensor Switch Wire Connector |
| 2. Lap Belt Retractor                   |   |

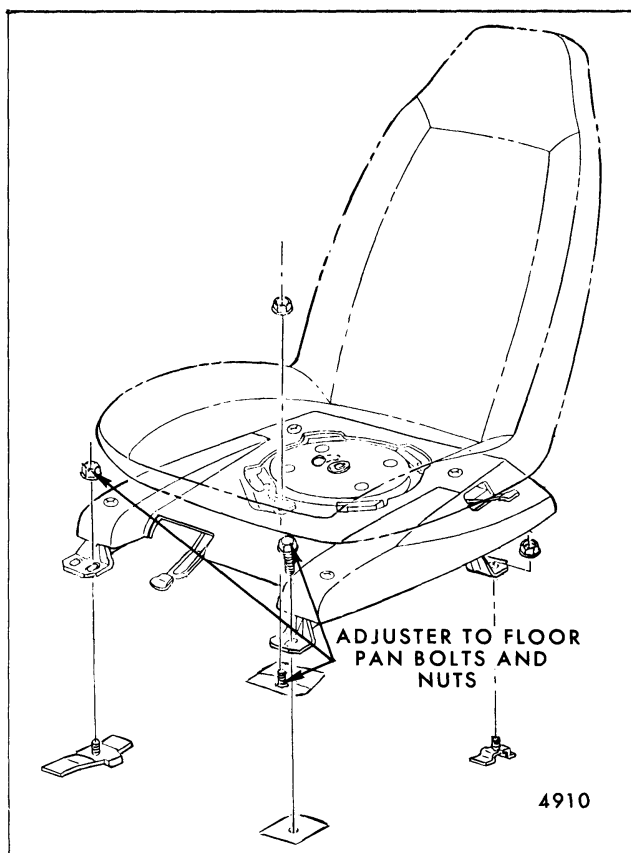


Fig. 9-14-Front Seat - Swivel Bucket Seat (Drivers Side Shown - Passenger Side Typical)

through one or two complete cycles. The above operation may be repeated on an "as required" basis if adjusters do not appear to be "in phase" after test cycle.

**WARNING:** THE SEAT ADJUSTER-TO-SEAT FRAME ATTACHING BOLTS ARE IMPORTANT ATTACHING PARTS IN THAT IT/THEY COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS. THEY MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THIS PART.

### SWIVEL SHELL BUCKET SEAT, ADJUSTER PLASTIC COVER, SWIVEL ASSEMBLY AND SEAT ADJUSTER - Chevrolet and Oldsmobile "A" Styles

Both the driver and passenger swivel shell bucket seat assembly consist of a formed high impact plastic shell bucket seat mounted on a swivel mechanism which can be turned approximately ninety degrees towards the door opening for easier entrance and exit from the body. The swivel mechanism is mounted on standard manually operated bucket seat adjusters

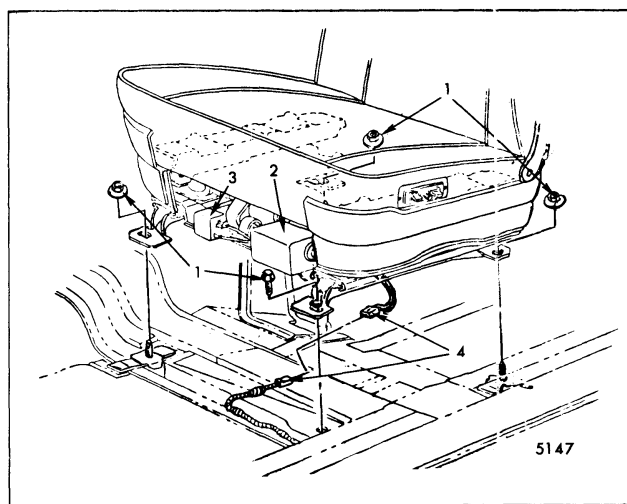


Fig. 9-15-Front Seat - Six-Way Power Operated Bucket Seat (Drivers Side Shown - Passenger Side Typical)

- |                               |                              |
|-------------------------------|------------------------------|
| 1. Adjuster-to-Floor Pan Nuts | 3. Motor Control Relay       |
| 2. Electric Motor Assembly    | 4. Motor Feed Wire Connector |



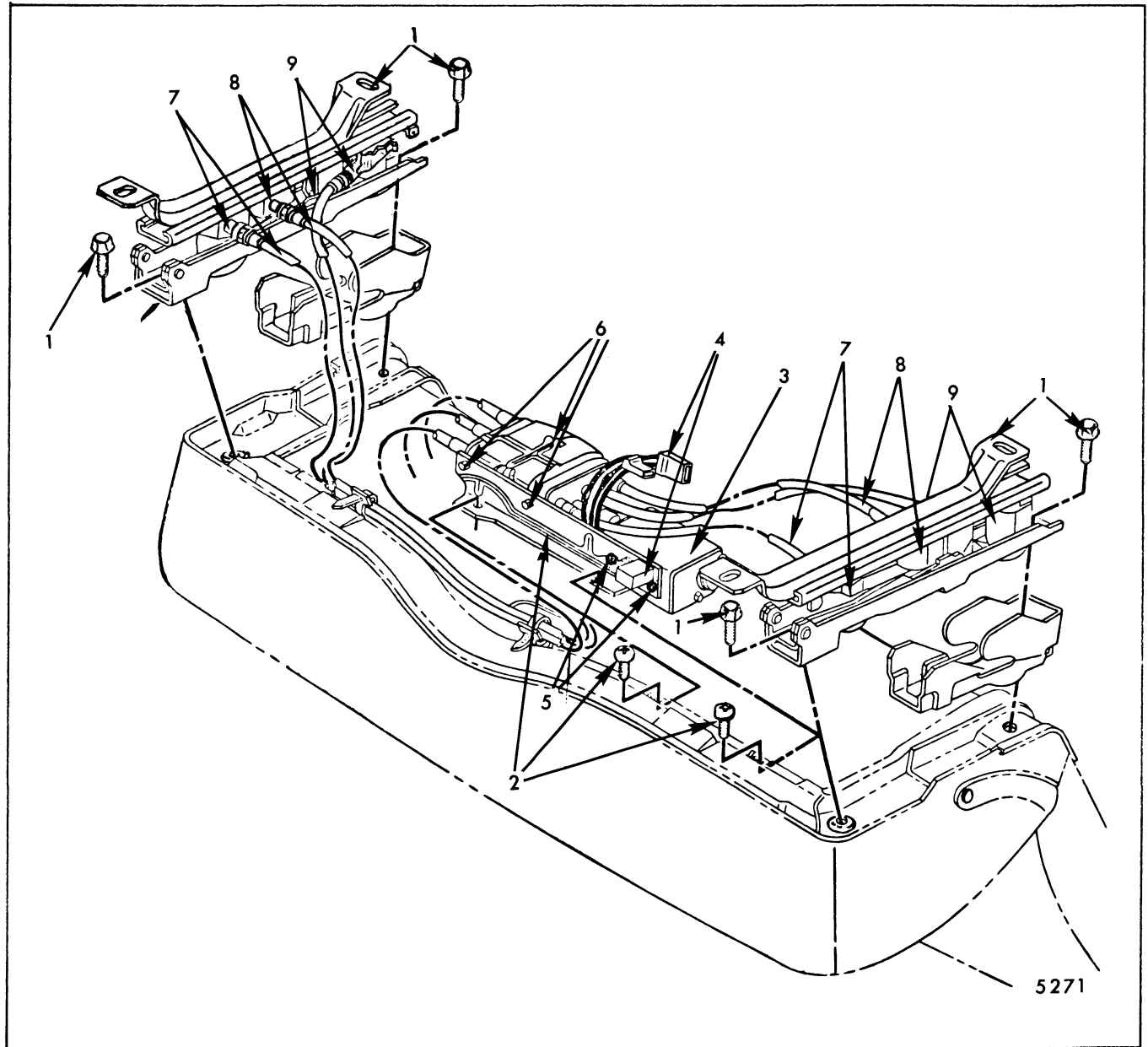


Fig. 9-16-Power Operated Six-Way Seat Adjusters, Motor Transmission and Drive Cables - Full Width Seats

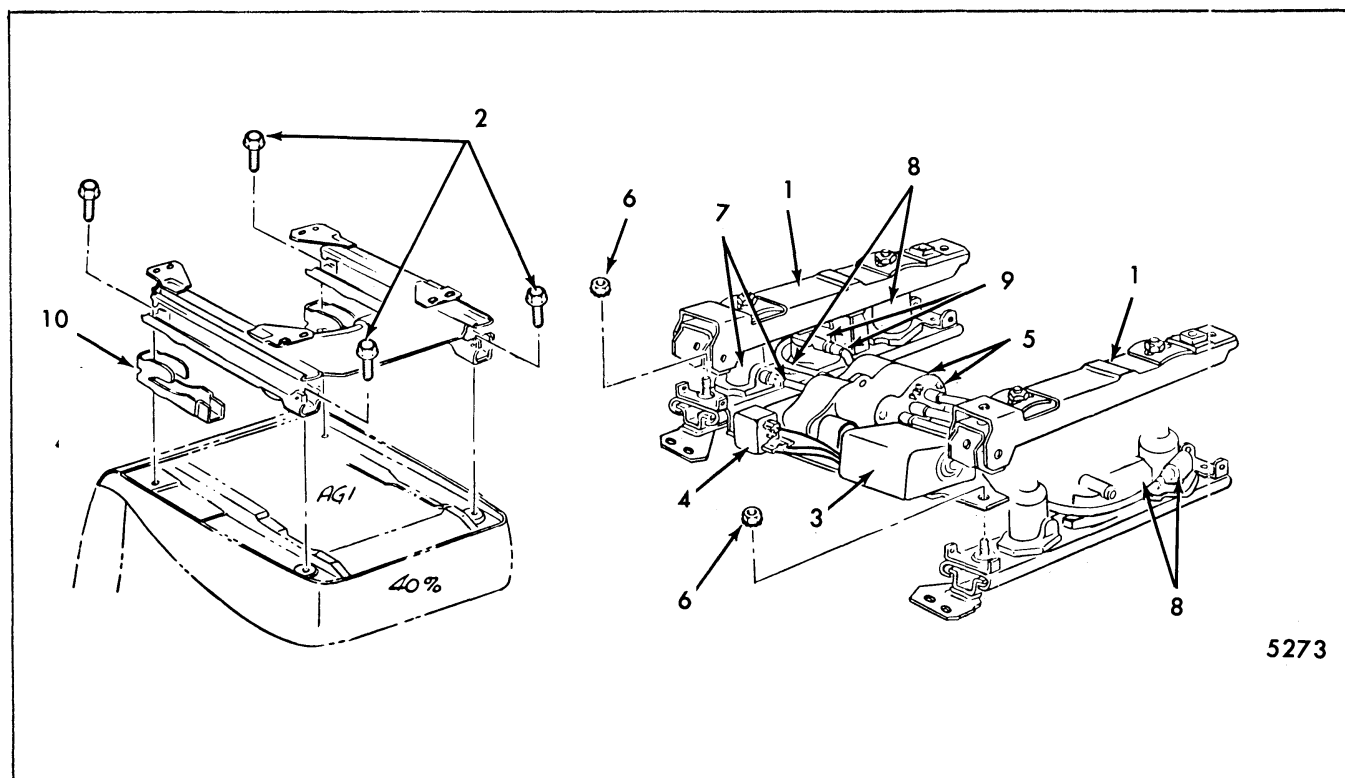
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|--|--|--|--|
| 1. Adjuster Assembly and Adjuster to Seat Frame Bolts  | 3. Motor Assembly                              | 6. Transmission and Attaching Screws to Support          | 8. Horizontal Actuator and Drive Cables (Black Cables)   |
| 2. Motor and Transmission Support and Attaching Screws | 4. Motor Relay and Wire Harness Connector      | 7. Front Vertical Gear Nut and Drive Cables (Red Cables) | 9. Rear Vertical Gear Nut and Drive Cables (Blue Cables) |
|  | 5. Motor and Relay Attaching Screws to Support |  | 10. Rear Upper Track Covers                              |

both of which are covered by a formed plastic cover installed between the shell bucket and swivel mechanism.

To remove and install one or more of these assemblies proceed in the following sequence.

### Removal and Installation

1. Remove front seat assembly, as described under "FRONT SEAT ASSEMBLY - Removal and Installation" and place upside-down on a clean protected surface.



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Fig. 9-17-Power Operated Six-Way Seat Adjusters, 60-40, 50-50, 40-40 and Bucket Drivers Seat Shown - Passengers Side Typical

- |   |  |                                    |  |
|---|--|------------------------------------|--|
| 1. Adjuster Assembly                          | 6. Motor and Transmission Support and Attaching Nuts | A. Drivers Inboard Side - Blue     | 9. Horizontal Actuator and Drive Cable (Black) |
| 2. Adjuster-to-Seat Frame Bolts               | 7. Front Vertical Gear Nut and Drive Cable (Black)   | B. Drivers Outboard Side - Green   | 10. Rear Upper Track Covers                    |
| 3. Motor Assembly                             | 8. Rear Vertical Gear Nut and Drive Cable            | C. Passengers Inboard Side - Green |  |
| 4. Motor Relay and Connector                  |  | D. Passengers Outboard Side - Blue |  |
| 5. Transmission Assembly and End Plate Screws |  |                                    |  |
- 
2. With swivel mechanism in forward position remove four bolts, through access holes in bottom of swivel assembly (Fig. 9-20, Item 4), securing seat to swivel assembly; then, remove seat from swivel. If removing passenger seat, carefully feed lap belt warning buzzer and light wire through hole in swivel plate and swivel base plate.
  3. Remove swivel and adjuster plastic cover attaching screws (Fig. 9-20, Item 1).
  4. Raise inboard side of cover up sufficiently to start slot in cover over base of swivel control knob; then, rotate cover rearward sufficiently (approximately 90 degrees) to pull slot in cover over and off wide portion of control knob (Fig. 9-20, Item 3).
  5. Turn swivel and adjuster assembly upside-down.
    - a. If removing adjuster assembly from swivel assembly disengage all springs and control wire from adjuster being removed (see Fig. 9-20).
  6. Turn swivel and adjuster assembly right side-up.
    - a. If removing adjuster assembly, remove two swivel-to-adjuster attaching nuts (Fig. 9-20, Item 1) and remove adjuster assembly.
    - b. If removing swivel assembly, remove all four swivel-to-adjuster attaching nuts (Fig. 9-20, Item 1) and remove swivel assembly from adjusters.
  7. To install adjuster swivel assembly, adjuster plastic cover or shell bucket seat, reverse re-

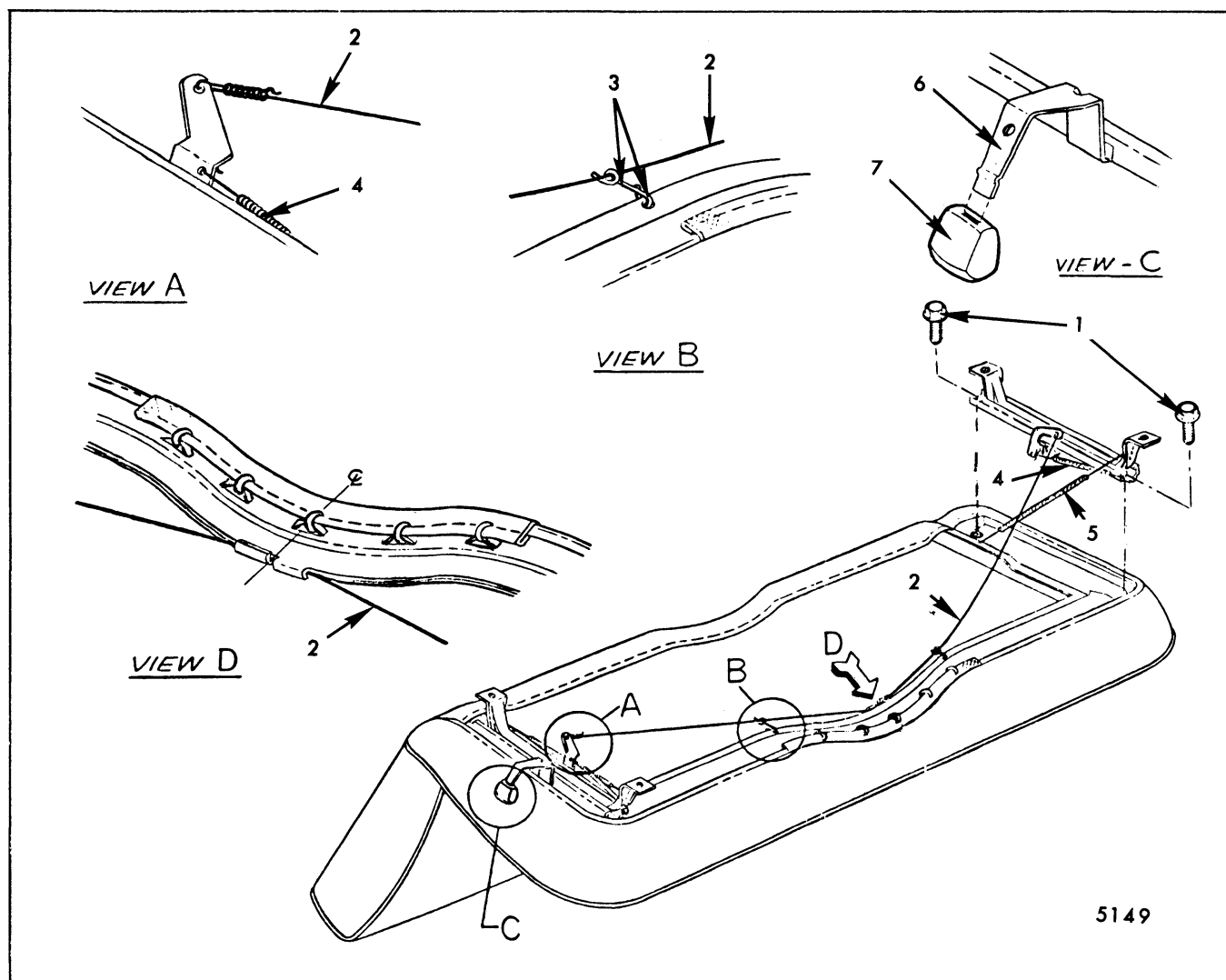


Fig. 9-18-Manual Seat Adjusters - Typical of Full Width Seat Manual Adjusters (Except "A" Body Styles)

- |   |  |                                   |                                      |
|---|--|-----------------------------------|--------------------------------------|
| 1. Adjuster-to-Seat<br>Frame Attaching<br>Bolts | 3. Locking Wire Tension<br>Hooks and Framer<br>Adjusting Holes | 4. Adjuster Locking Bar<br>Spring | 6. Left Adjuster Lock<br>Control Arm |
| 2. Locking Wire                                 |  | 5. Adjuster Assist<br>Spring      | 7. Lock Control Arm<br>Knob          |

moval procedure. If adjuster with lock control lever is being replaced, remove control lever knob from original adjuster and install on new adjuster or install a new knob as described under "Manually Operated Seat Adjuster Control Arm Knob".

**NOTE:** The right and left seat adjuster sliding mechanism should be in same relative position when attaching adjuster to seat bottom frame tighten seat adjuster-to-seat frame attaching bolts 12 to 18 ft. lbs.

## POWER OPERATED TWO-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power operated two-way seat adjusters.

### ELECTRIC MOTOR - Power Operated Two-Way Seat

#### Removal and Installation

1. If seat is operable, operate seat to a midway position.

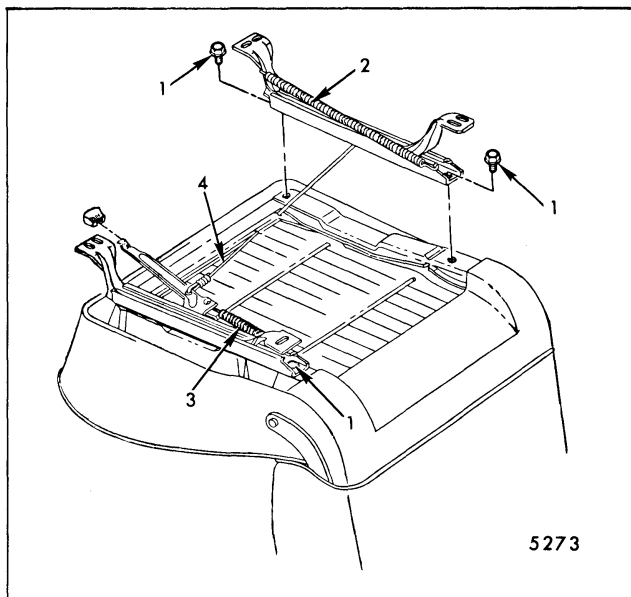


Fig. 9-19-Manual Seat Adjusters - Bucket Seats (Except Swivel Bucket)

- |   |  |
|---|--|
| 1. Adjuster-to-Seat<br>Frame Attaching<br>Bolts | 3. Adjuster Lock Control<br>Arm Spring |
| 2. Adjuster Assist<br>Spring                    | 4. Locking Wire                        |
- Remove front seat adjuster-to-floor pan attaching bolts and tilt seat rearward.
  - On full width seat disconnect both power drive cables from motor. On 60-40 drivers seat, detach one seat adjuster from seat bottom frame; then, disengage drive cable from motor on that side.
  - Disconnect feed wire harness from actuator motor.
  - Remove screws that secure motor support to seat bottom frame and remove motor with attached support from seat frame (Figs. 9-9 and 9-10).
  - Remove screws securing motor to motor support bracket and remove motor assembly (Figs. 9-9 and 9-10).
  - To install, reverse removal procedure. Check for proper seat operation to extreme limits of travel.

## HORIZONTAL GEARNUT ASSEMBLY- Power Two-Way Full Width Seat and 60-40 Drivers Seat

### Removal and Installation

- Remove front seat assembly with adjusters at-

tached and place upside-down on a clean, protected surface.

- Detach power drive cable from gearnut to be removed.
- Using a "clutch" type screwdriver or others suitable tool, remove two shoulder bolts securing gearnut to upper slide portion of seat adjusters (Figs. 9-9 and 9-10).
- Rotate jackscrew assembly upward sufficiently to gain access to cotter pin at rear of jackscrew assembly.
- Remove cotter pin, washer and rubber bumper from rear end of jackscrew; then, remove gearnut from jackscrew.
- To install, reverse removal procedure. Prior to installing seat assembly in body, be sure adjusters are "in phase". See Step 5 under "Front Seat Assembly - Removal and Installation".

## HORIZONTAL JACKSCREW- Power Two-Way Full Width Seat and 60-40 Drivers Seat

### Removal and Installation

- Remove from seat assembly with adjusters attached and place upside-down on a clean, protected surface.
- Detach power drive cable from gearnut and jackscrew assembly to be removed.
- Using a suitable tool (preferably a "clutch" type screwdriver or equivalent), remove two shoulder bolts securing gearnut to upper slide portion of seat adjuster assembly (Figs. 9-9 and 9-10).
- Remove retainer that secures stop bracket crosspin to adjuster front pedestal and remove crosspin (Figs. 9-9 and 9-10).
- Remove jackscrew assembly from seat adjuster.
- To install, reverse removal procedure.

**NOTE:** When replacing jackscrew assembly with new part, remove nut, washers, rubber bumper and stop bracket with inserted rubber grommet from front end of jackscrew, as well as gearnut and washers, rubber bumper and cotter pin from rear end of jackscrew and transfer to new jackscrew assembly.

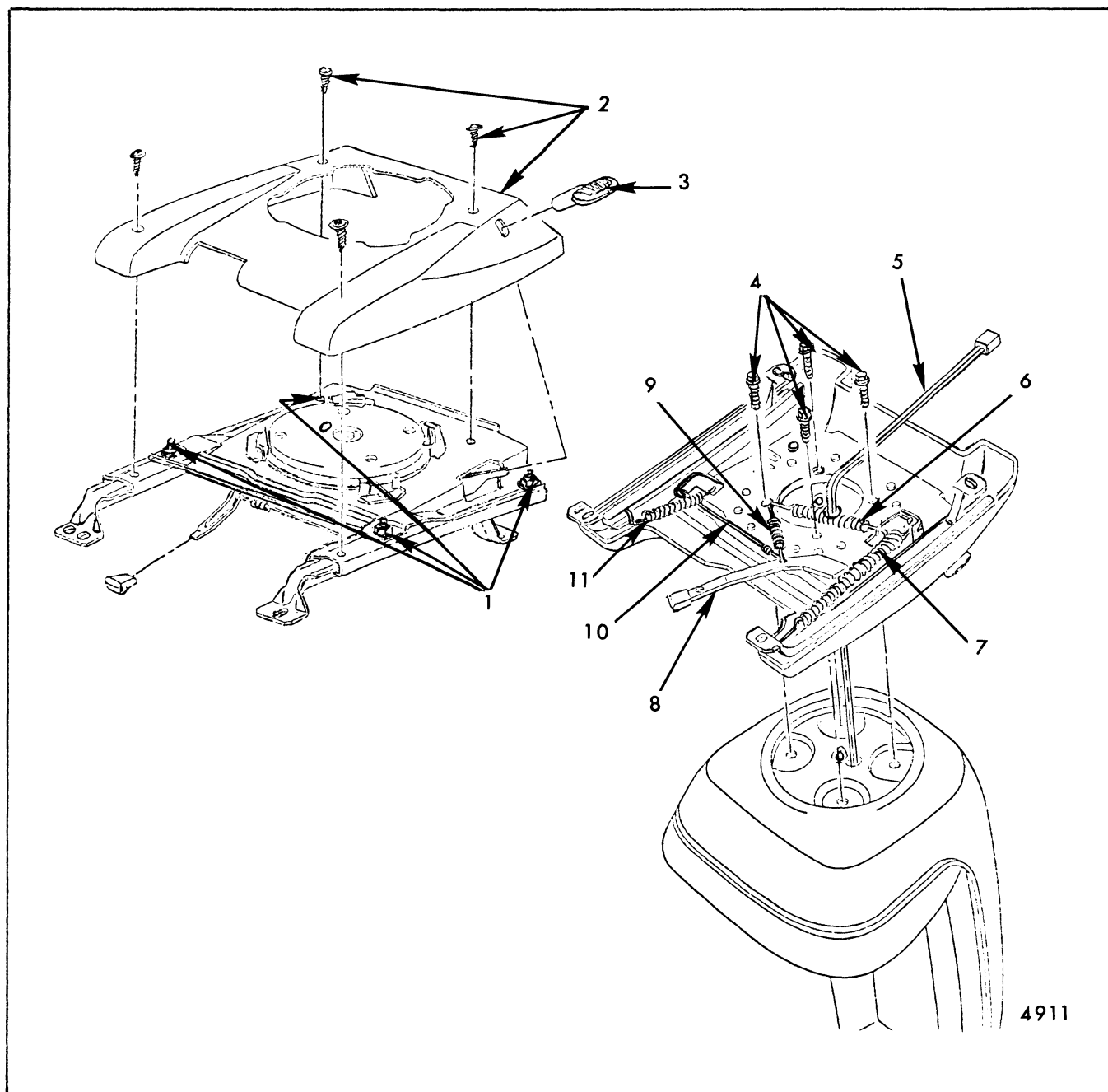


Fig. 9-20-Swivel Shell Bucket Seat, Swivel and Adjuster Cover, Swivel Assembly and Adjuster Assembly

- |  |  |                                     |                                       |
|--|--|-------------------------------------|---------------------------------------|
| 1. Swivel Attaching Bolts                  | 4. Shell Bucket-to-Swivel Attaching Screws                                   | 6. Swivel Control Lock Lever Spring | 9. Adjuster Lock Control Lever Spring |
| 2. Swivel Cover and Cover Attaching Screws | 5. Lap Belt Warning Lamp and Buzzer Sensor Switch Wire (Passenger Side Only) | 7. Outer Adjuster Assist Spring     | 10. Adjuster Lock Control Wire        |
| 3. Swivel Control Knob                     |  | 8. Adjuster Lock Control Lever      | 11. Inner Adjuster Assist Spring      |

## PLASTIC SLIDES - Power Two-Way Full Width Seat and 60-40 Drivers Seat

### Removal and Installation

1. Remove front seat adjuster to be serviced from front seat assembly. (See "Front Seat Adjuster - Two-Way Electric - Removal and Installation" procedures).
2. Using a suitable tool (preferably a "clutch" type screwdriver or equivalent), remove two shoulder bolts securing gearnut to upper channel to seat adjuster assembly (Figs. 9-9 and 9-10).
3. Slide lower track and support base portion of seat adjuster, with attached jackscrew and gearnut, forward until it disengages from upper channel assembly. The four plastic slides may now be disengaged from positioning slots on lower track.
4. To install, reverse removal procedure making sure that groove in plastic slide slips onto lower track with thinner section of slide protruding above surface of track.

## SIX-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power operated six-way seat adjusters.

### ELECTRIC MOTOR - Six-Way Seats

#### Removal and Installation

1. Remove front seat assembly, as previously described, and place upside-down on a clean, protected surface.
2. Disconnect motor feed wires from motor control relay (Figs. 9-16 and 9-17).
3. Remove motor and transmission support-to-seat frame attaching bolts (Figs. 9-16 and 9-17).
4. Remove motor-to-support attaching screws; then, move motor assembly outboard (away from transmission) sufficiently to disengage motor from rubber coupling.
5. To install, reverse removal procedure making sure rubber coupling is properly engaged at both motor and transmission. Check that seat harness is properly secured to seat. Check operation of seat to full limits of travel.

## HORIZONTAL ACTUATOR - Six-Way Seat Adjusters

### Removal and Installation

1. Remove seat assembly from body, as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.
2. At top of adjuster remove front and rear vertical gearnut attaching nuts and tension springs (Figs. 9-21 and 9-22).
3. Lift front of adjuster upper channel upward; then remove screws securing horizontal actuator to adjuster upper channel assembly and remove actuator from adjuster (Figs. 9-21 and 9-22).
4. To install, reverse removal procedure. When installing horizontal actuator, be sure actuator drive gear is fully engaged with teeth on lower channel. With actuator attaching screws tight, there should be no free motion between upper and lower adjusting channels. Adjust actuator "as required" until all free motion between channels has been removed (see "Power Six-Way Seat Adjuster Horizontal Actuator Adjustment" under FRONT SEAT ADJUSTMENTS). Be sure seat adjusters are "in phase", before installing seat assembly into body. See Step 6 under "Front Seat Assembly - Removal and Installation".

## FRONT AND REAR VERTICAL GEARNUT - Six-Way Seat Adjusters

### Removal and Installation

1. Operate seat to full forward position.

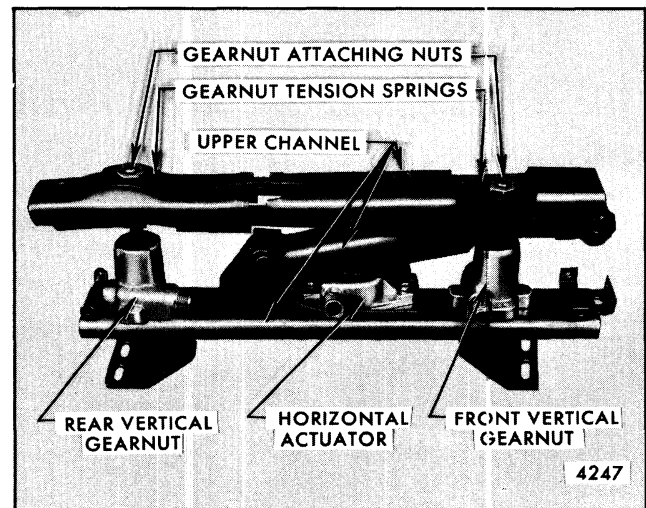


Fig. 9-21-Six-Way Seat Adjuster - "B, C and E" Styles

2. Remove front seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.
3. At top of adjuster, remove both vertical gearnut attaching nuts and tension springs (Figs. 9-21 and 9-22).
4. Lay adjuster on its side and remove front vertical gearnut attaching screws; then, remove gearnut from adjuster (Fig. 9-22).

**NOTE:** If seat was not in forward position when removed from car, it may be necessary to manually operate the horizontal actuator to gain access to vertical gearnut attaching screws on bottom of lower channel.

5. If front vertical gearnut is being replaced with a new part, transfer gearnut shoulder nut and tension spring to new gearnut assembly (Fig. 9-22).
6. To install, reverse removal procedure. Be sure adjusters are "in phase" before installing seat assembly into body. See Step 5 under "Front Seat Assembly - Removal and Installation".

## LOWER OR UPPER CHANNEL AND PLASTIC SLIDES - Six-Way Seat Adjusters

### Removal and Installation

1. Remove seat assembly from body, as previously described, and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat, as previously described.
2. At top of adjuster, remove both vertical gearnut attaching nuts and tension springs (Figs. 9-21 and 9-22). Lift front of adjuster upper channel upward; then, remove horizontal actuator attaching screws and remove horizontal actuator from adjuster (Fig. 9-22).
3. Slide lower channel until it is completely disengaged from upper channel. Plastic slides may be removed from lower channel.
4. To install upper and lower channel, reverse removal procedure.
  - a. If replacing lower channel, transfer plastic slides to new lower channel.
  - b. If replacing upper channel, transfer vertical gearnuts to new upper channel.

**NOTE:** Make sure horizontal rack gear of lower channel and sliding surface of upper

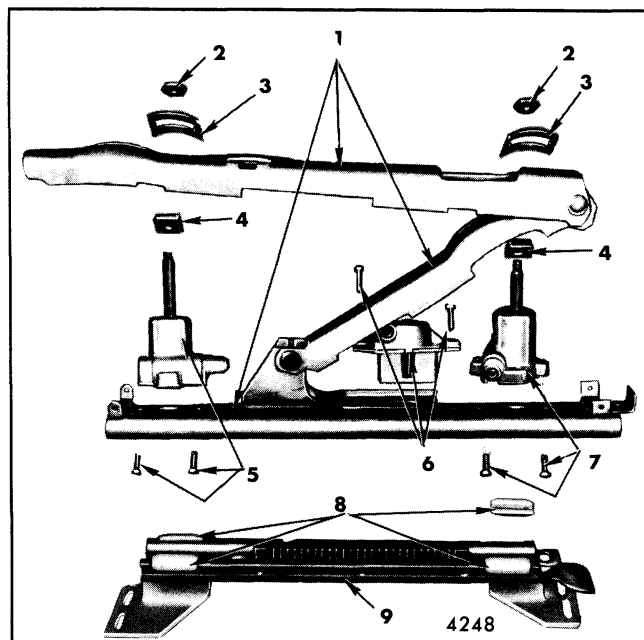


Fig. 9-22-Six-Way Seat Adjuster Components

- |   |  |
|---|--|
| 1. Upper Channel Assembly                   | 5. Rear Vertical Gearnut and Attaching Screws  |
| 2. Upper Channel to Gearnut Attaching Bolts | 6. Horizontal Actuator and Attaching Screws    |
| 3. Gearnut Tension Springs                  | 7. Front Vertical Gearnut and Attaching Screws |
| 4. Gearnut Shoulder Nuts                    | 8. Plastic Shoes                               |
|   | 9. Lower Channel                               |

channel are properly lubricated with "Lubriplate" (630AAW) or equivalent.

Make sure adjusters are "in phase" prior to installing seat assembly into body. See Step 5 under "Front Seat Assembly - Removal and Installation".

Check operation of seat to limits of both horizontal and vertical travel.

## HORIZONTAL AND VERTICAL DRIVE CABLES - Six-Way Seats

### Removal and Installation

1. On 60-40, 40-40 and bucket seats, remove front seat assembly from body with attached adjusters, motor and transmission and place upside-down on a clean, protected surface.
2. If removing the short front vertical or horizontal cables on the right side of 60-40, 50-50, 40-40 or bucket seats, remove right seat adjuster. Detach

cables from seat adjuster by squeezing oblong plastic connector and pulling cable off adjuster.

3. Remove screws securing horizontal and vertical cable end plate on side of transmission from which cables are being removed and remove cables from seat assembly; then, disengage cables from end plate.
4. To install horizontal and vertical cables, reverse removal procedure. Install color coded drive cables as shown in Figure 9-16 for full width seats and Figure 9-17 for 60-40, 50-50, 40-40 and bucket seats. Make sure cables are properly engaged with transmission prior to installing transmission end plate. Check operation of seat adjusters to limits of horizontal and vertical travel.

## TRANSMISSION - Six-Way Seats

### Removal and Installation

1. Remove front seat assembly with attached adjusters, motor and transmission as previously

described and place upside-down on a clean, protected surface.

2. On 60-40, 50-50, 40-40 and bucket seats, remove right seat adjuster (see "SEAT ADJUSTER - Removal and Installation").

**NOTE:** Using long nose pliers, disengage locking tab on harness portion of wire harness connector at transmission; then, disengage connector from transmission.

3. Remove transmission to support attaching screws and screws securing cable end plate on both sides of transmission; then, disengage transmission from motor drive coupling and cables and remove transmission from seat assembly (Figs. 9-16 and 9-17).
4. To install, reverse removal procedure. Install colored coded drive cables as shown in Figure 9-16 for full width seats and Figure 9-17 for 60-40, 50-50, 40-40 and bucket seats. Make sure cables are properly engaged with transmission prior to installing transmission end plates. Check operation of transmission and seat adjusters to limits of horizontal and vertical travel.

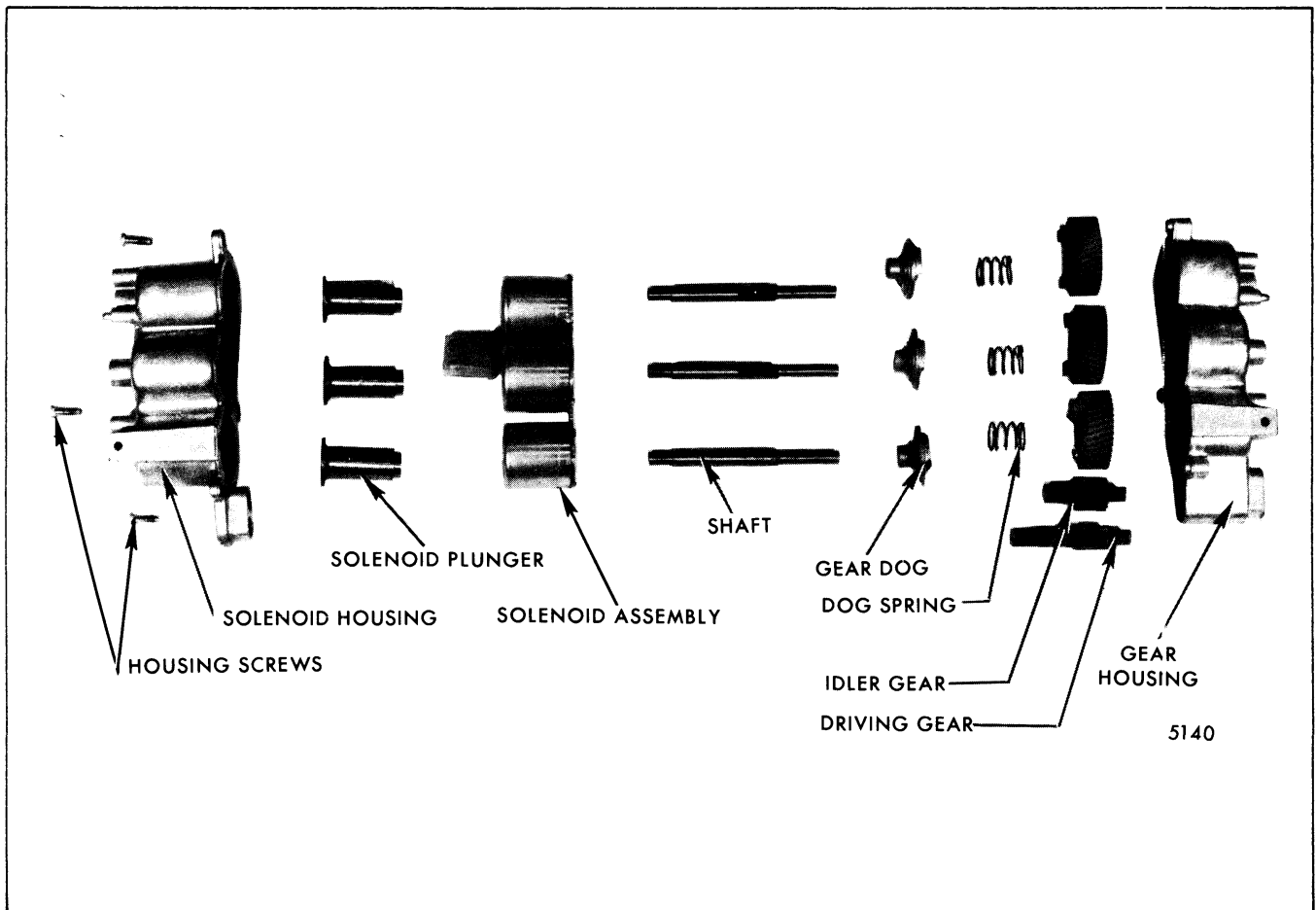


Fig. 9-23-Six-Way Seat Adjuster Transmission - "B and C" Full Width Seat



## DISASSEMBLY AND ASSEMBLY OF TRANSMISSION

1. Remove front seat adjuster transmission from seat assembly.
2. Remove screws securing rear gear housing to the solenoid housing; then, carefully separate housings and remove component parts of transmission assembly (Fig. 9-23).
3. To assemble transmission, reverse removal procedure.

**NOTE:** Prior to or during installation, lubricate frictional surfaces of driving gear; thrust washer, large gears, dog washers, gear shafts and solenoid plungers with "Lubriplate" (630AAW) or equivalent.

## FRONT SEAT BACK ASSEMBLY - Four-Door Styles with Full Width Seat

### Removal and Installation

1. Remove front seat assembly from body and place upside-down on a clean, protected surface. Remove seat side panels; where present. On seats where seat back panel covers seat back frame attaching bolts, detach or remove seat back panel.

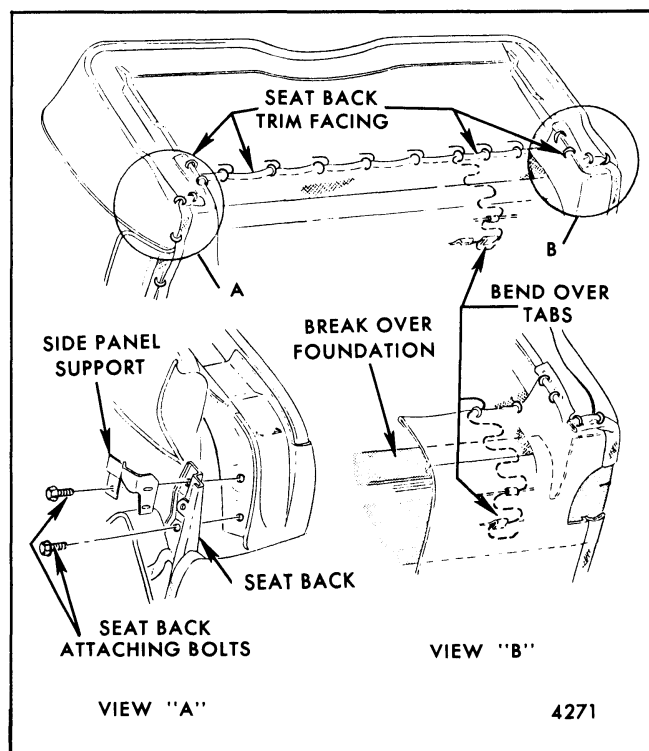


Fig. 9-24-Front Seat Back Attachment - Typical Four Door Attachment - Styles with Full Width Conventional Seat

2. Remove hog rings securing lower edge of seat back trim to seat cushion springs (see Fig. 9-24).
3. Raise lower edge of seat back trim, detach fiber-board breakover foundation and bend out tabs on seat back frame securing seat cushion springs. Disengage springs from tabs (Fig. 9-24).
4. At each end of seat, remove hog rings securing lower edge of seat back trim to seat bottom frame. Raise or turn back seat back trim to expose bolts securing seat back frame to seat cushion frame (Fig. 9-24). Where seat back lighter or courtesy light is present, disconnect wire from seat cushion frame.
5. Place seat assembly in upright position. Then with a helper holding seat back assembly, remove seat back attaching bolts on each side of seat and remove seat back assembly.
6. To install seat back assembly, reverse removal procedure.

## FRONT SEAT BACK PANEL COURTESY LAMPS AND/OR LAMP SWITCH - Oldsmobile Luxury Sedan

### Removal and Installation

1. Remove exposed screws securing courtesy lamp or lamp switch to panel; then, disengage lamp or switch from panel.
2. Disconnect lamp or switch wires (see Fig. 9-25) and remove lamp or switch.
3. To install front seat back courtesy lamp and/or switch, reverse removal procedure.

## FRONT SEAT BACK ASSIST STRAPS, BACK PANEL ASSEMBLY AND CLOCK ASSEMBLY - Oldsmobile Luxury Sedan

### Removal and Installation

1. At the center and outer ends of the assist straps, carefully pry (snap) off assist strap escutcheons (Fig. 9-26, Views "A" and "B").
2. Remove assist strap and panel attaching screws (Fig. 9-26) and remove assist straps. At bottom center of panel remove two panel attaching screws (Fig. 9-26). Lift panel assembly upward to disengage from hanger brackets; then, disconnect clock and courtesy lamp wire harness connector (see Fig. 9-25) and remove panel assembly from seat back.

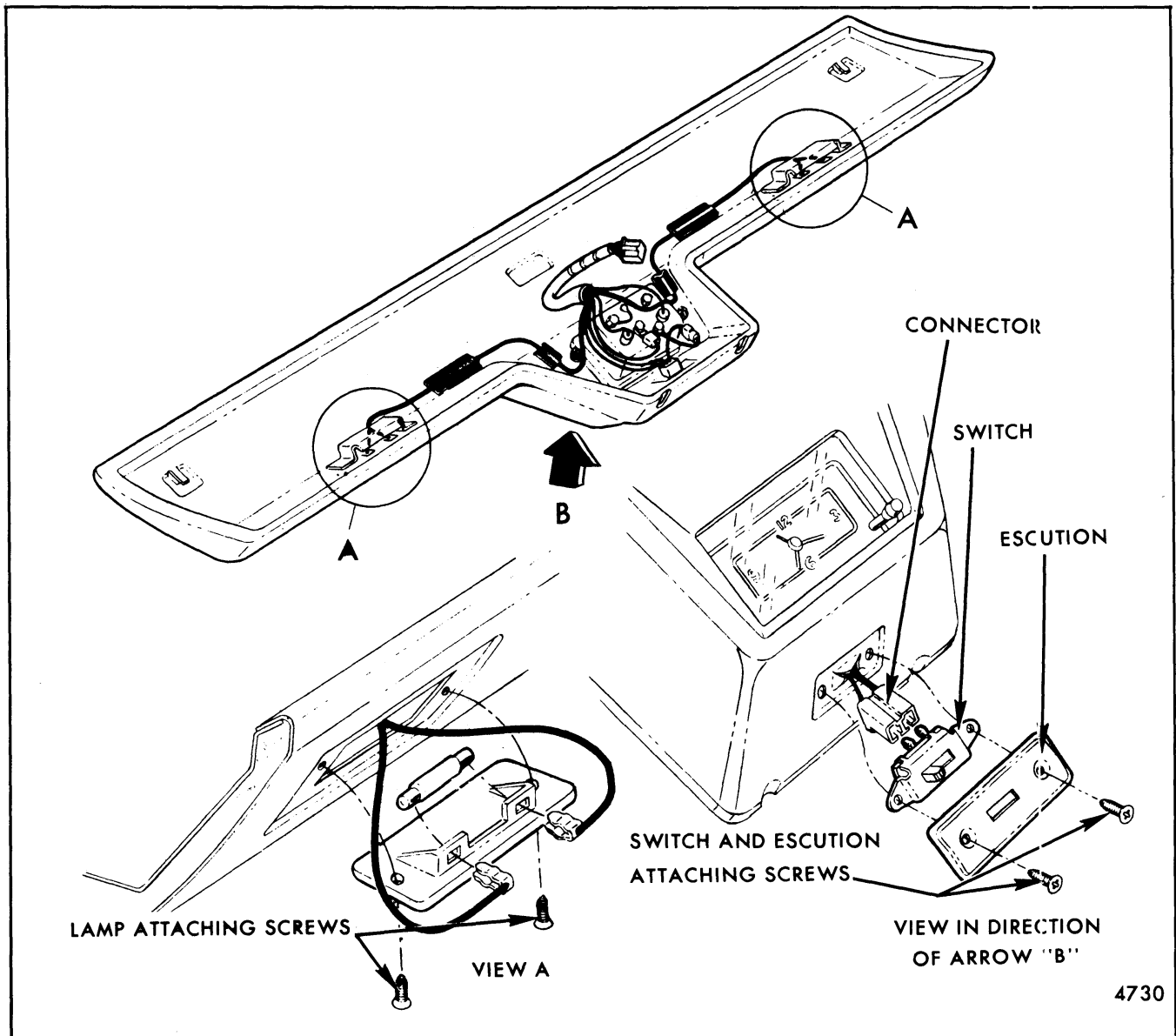


Fig. 9-25-Front Seat Back Clock, Courtesy Lamps and Lamp Switch - Oldsmobile Luxury Sedan

3. To remove clock assembly, remove screws from front side of panel securing clock (see Fig. 9-25) and remove clock assembly from panel.
4. To install clock assembly, panel assembly or assist straps, reverse removal procedure.

### FRONT SEAT BACK ASSIST STRAP AND PANEL ASSEMBLY - Cadillac

#### Removal and Installation

To remove and install the front seat back assist strap, front seat back panel or related components, remove components in numerical sequence, as shown in Fig-

ure 9-27 for two-door styles, or Figure 9-28 for four-door styles.

**NOTE:** To remove assist strap side escutcheons carefully pry escutcheon off retainer with a flat-bladed tool. Apply tape over end of tool to prevent damaging escutcheon finish.

### FRONT SEAT BACK ASSEMBLY (Right or Left) - Four-Door Style Full Width Conventional Seat with Notch Down Center Arm Rest or 60-40 Seats

#### Removal and Installation

1. Remove front seat assembly from body and place

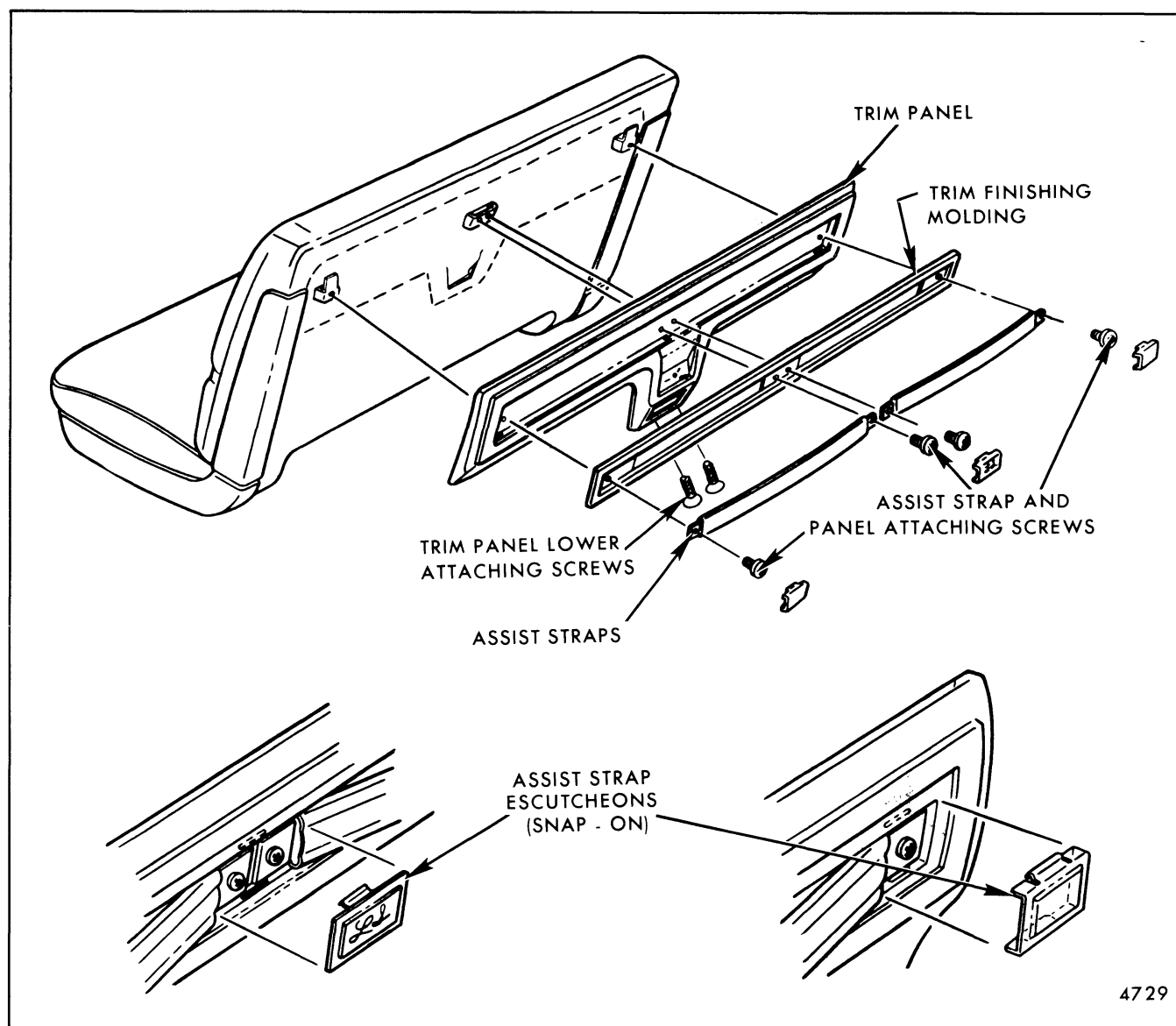


Fig. 9-26-Front Seat Back Assist Straps and Panel Assembly - Oldsmobile Luxury Sedan

upside-down on a clean, protected surface. Remove seat cushion side panels. On 60-40 seats remove seat cushion and seat back side panels.

2. Remove hog rings securing lower edge of seat cushion trim bottom facing to seat cushion springs and frame (Fig. 9-30 or 9-31).
3. Remove seat side panel where present or outer hinge arm cover (Fig. 9-30 or 9-31); then, using a flat-bladed tool carefully remove retainer securing seat back outer arm to hinge pin (Fig. 9-30 or 9-31).
4. On notch back seats detach trim sufficiently to expose seat back attaching bolt access holes (Fig. 9-30); then, through access holes remove seat back lock-up screws (Fig. 9-30). On 60-40 seats detach trim at outer hinge arm sufficiently to remove outer hinge arm lock-up screw (Fig. 9-31).
5. Turn seat assembly right side up. Carefully disengage seat back outer arm from hinge pin; then, tilt seat back forward and upward to disengage seat back inner arm from hinge pin and remove seat back from body (Fig. 9-30 or 9-31).
6. To install seat back assembly, reverse removal procedure. If seat back outer arm retainer is damaged, install new retainer.

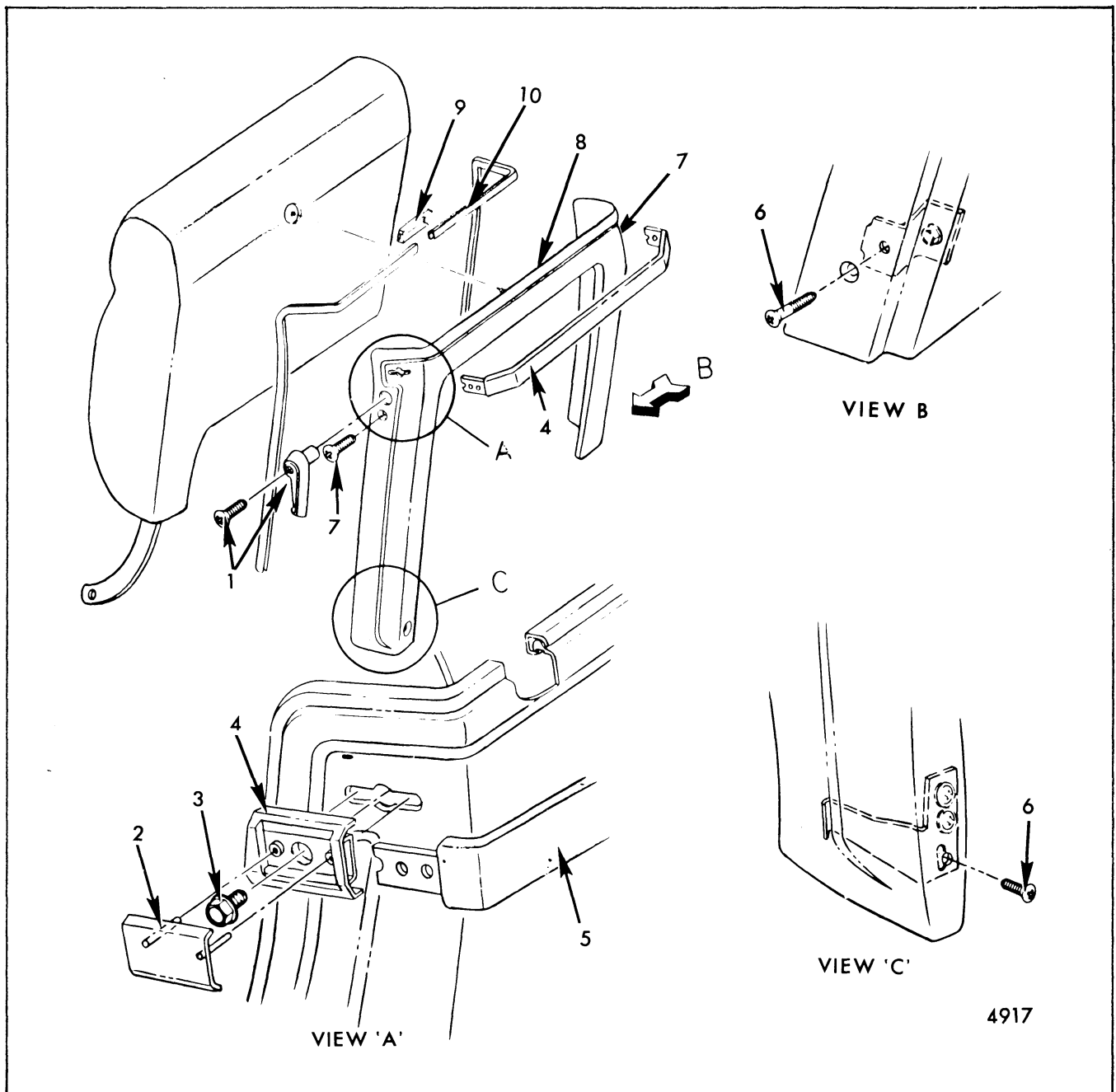


Fig. 9-27-Front Seat Back Assist Strap and Panel Assembly - Cadillac Two-Door Styles

- |  |  |                                 |  |
|--|--|---------------------------------|--|
| 1. Seat Back Lock Handle and Attaching Screw | 3. Escutcheon and Strap Retainer Screw | 6. Panel Lower Attaching Screws | 9. Panel Finishing Molding Escutcheon        |
| 2. Assist Strap Escutcheon                   | 4. Escutcheon and Strap Retainer       | 7. Panel Upper Attaching Screws | 10. Panel Finishing Molding - Right and Left |
|  | 5. Assist Strap                        | 8. Seat Back Panel              |  |

**FRONT SEAT BACK ASSEMBLY (Right or Left) - Two-Door Style Conventional Full Width Seat, Seat with Notch Down Center Arm Rest, 40-40 and 60-40 Seat**

**Removal and Installation**

1. On seat with seat cushion side panel, remove side

panel and detach seat cushion trim sufficiently to expose outer hinge pin and retainer (Fig. 9-32 or 9-33).

On seats where seat back side panel covers outer hinge pin and retainer, remove seat back side panel.

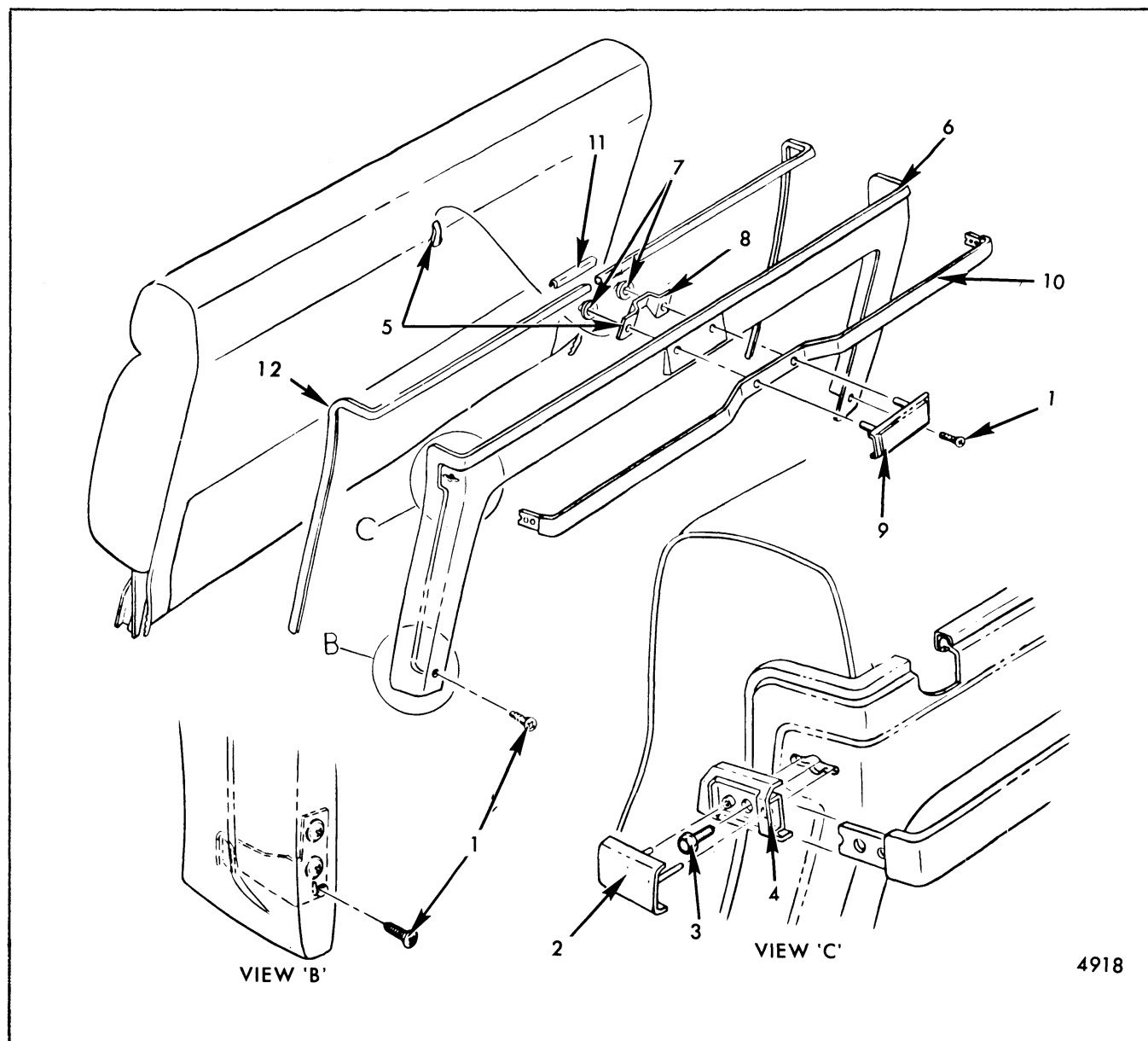


Fig. 9-28-Front Seat Back Assist Strap and Panel Assembly - Cadillac Four-Door Styles

- |   |  |  |   |
|---|--|--|---|
| 1. Panel Lower Attaching Screw            | 4. Assist Strap Side Retainer                                | 7. Assist Strap, Center Escutcheon and Hanger Attaching Nuts | 10. Assist Strap                              |
| 2. Assist Strap Side Escutcheon (Snap-On) | 5. Panel Center Hanger (on Seat Frame) and Hanger (on Panel) | 8. Panel Center Hanger                                       | 11. Panel Finishing Molding Center Escutcheon |
| 3. Assist Strap Side Retainer Screw       | 6. Back Panel Assembly                                       | 9. Assist Strap Center Escutcheon                            | 12. Panel Finishing Molding                   |

On seats with outer hinge arm cover or inner hinge pin cover, remove screw or detach fastener securing cover and remove cover (Fig. 9-32 or 9-33).

- Using a flat-bladed tool carefully remove retainer, securing seat back outer arm to hinge pin (Fig. 9-32 or 9-33).

- Carefully disengage seat back outer arm from hinge pin; then, tilt seat back forward and upward to disengage seat back inner arm from hinge pin and detach seat back from seat cushion. On seats with manually operated seat back locks the seat back can be removed from the body.

**NOTE:** On seats equipped with electric seat back

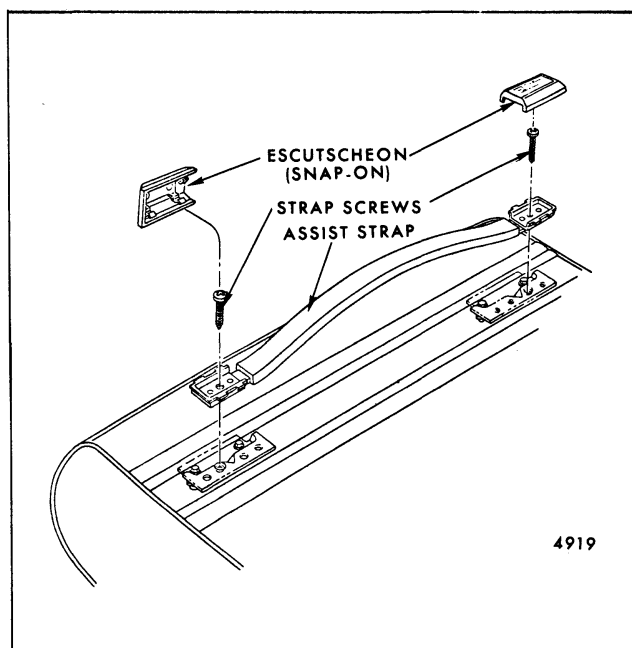


Fig. 9-29-Front Seat Back Assist Strap (Two-Door Style Shown, Four-Door Typical)

locks, lay seat back on seat cushion and carefully disengage lap belt webbing plastic protector (see Fig. 9-32 or 9-34) from seat cushion. From under front of seat, disconnect lock actuator feed wire from relay jumper wire; from under rear of seat detach feed wire clip from strap securing wire to seat spring (see Fig. 9-34); then, carefully pull feed wire up through seat cushion and remove seat back from body.

4. To install seat back assembly, reverse removal procedure making sure washers are installed over hinge pins prior to installing seat back. If outer retainer is damaged, install new retainer.

**WARNING: CHECK OPERATION OF SEAT BACK LOCKS. ON SEATS EQUIPPED WITH MANUALLY OPERATED LOCKS THE SEAT BACK SHOULD LOCK WITH NO MORE THAN 10 LBS. REARWARD EFFORT APPLIED AT THE TOP OUTBOARD CORNER OF THE SEAT BACK. ON SEATS EQUIPPED WITH ELECTRIC SEAT BACK LOCKS BOTH SEAT BACK LOCKS SHOULD LOCK IN THE UPRIGHT POSITION WHEN THE DOORS ARE CLOSED. IF EITHER SEAT BACK DOES NOT LOCK REFER TO "ELECTRIC SEAT BACK LOCK".**

#### **FRONT SEAT BACK ASSEMBLY (Right or Left) - 50-50 Seat - Chevrolet 1BN47-39 and 69 Styles**

The 50-50 passenger seat back incorporates a reclin-

ing seat back which can be adjusted approximately 20 degrees rearward of normal position.

The passenger reclining unit consist of a spring loaded friction type cylinder and plunger located in right side of the passenger seat frame. The reclining unit is controlled by a lever type handle at the right side of the seat cushion. When the control handle is raised the unit is unlocked and with no pressure on the seat back the spring loaded unit will move the seat back forward or the seat back can be tilted rearward by applying rearward pressure on the back. When the control handle is released the reclining unit maintains the seat back in position however, the seat back can be pushed forward to normal position without actuating the control handle.

#### **Back Assembly - Removal and Installation**

1. On two-door styles remove seat back lock control handle. On two or four-door styles remove seat back side outer panel secured by four screws.
2. Detach seat back trim at outer side facing (see Fig. 9-35) sufficiently to remove seat back attaching bolt and on four-door styles seat back lock-out bolt (see Fig. 9-35).
3. Move seat back outward sufficiently to disengage inner pin from cushion frame support (see Fig. 9-35); then, remove seat back from seat cushion.
4. To install seat back assembly, reverse removal procedure.

#### **FRONT SEAT BACK RECLINING UNIT (Passenger Side) - Removal and Installation**

##### **Removal and Installation**

1. Remove passenger front seat assembly, as described under "FRONT SEAT ASSEMBLY - Removal and Installation" and place on clean protected surface.
2. Remove reclining control handle. Detach seat trim side facing from right of seat cushion frame and turn back trim sufficiently to gain access to reclining unit front and rear attaching pin retainers.
3. Position seat back in a full reclined position; then, remove reclining unit front and rear attaching pin snap ring retainers, using snap ring tool or a suitable hooked end tool. Remove attaching pins and reclining unit.
4. To install reclining unit, reverse removal procedure. To facilitate installation of reclining unit,

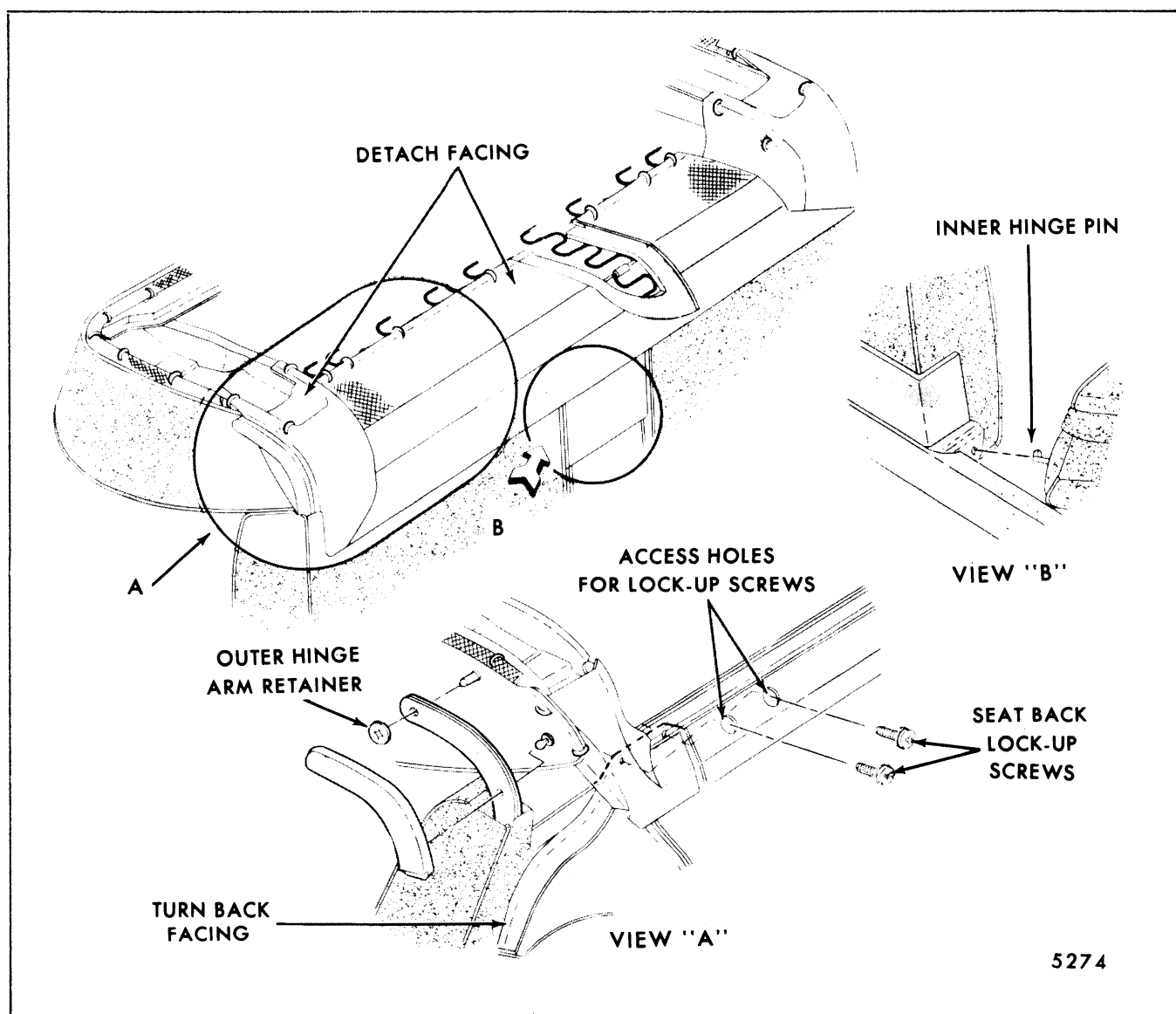


Fig. 9-30-Front Seat Back Attachment (Right or Left) - Four-Door Style Notch Back Seat and 60-40 Seats

push plunger into cylinder approximately 1/2 inch to shorten unit. This can be accomplished by placing plunger end of unit on floor and pushing down while actuating control lever; then, when plunger has moved into cylinder approximately 1/2 inch, release control lever to lock plunger in position. Check operation of reclining unit to full limits of travel.

## FRONT SEAT BACK - Standard Bucket Seats

### Removal and Installation

1. On seats equipped with full seat back panels, remove seat back panel by removing lower at-

taching screws and lifting panel upward to disengage upper brackets from hangers on seat back frame.

2. On seats equipped with inner hinge arm link, remove link upper retainer (Fig. 9-36) and disengage link from hinge arm.
3. At both sides of seat back remove retainer securing hinge arm to hinge arm pin on seat cushion (Fig. 9-36); then, disengage hinge arms from pins and remove seat back.
4. To install seat back assembly, reverse removal procedure. Where necessary, replace damaged retainers with new retainers.

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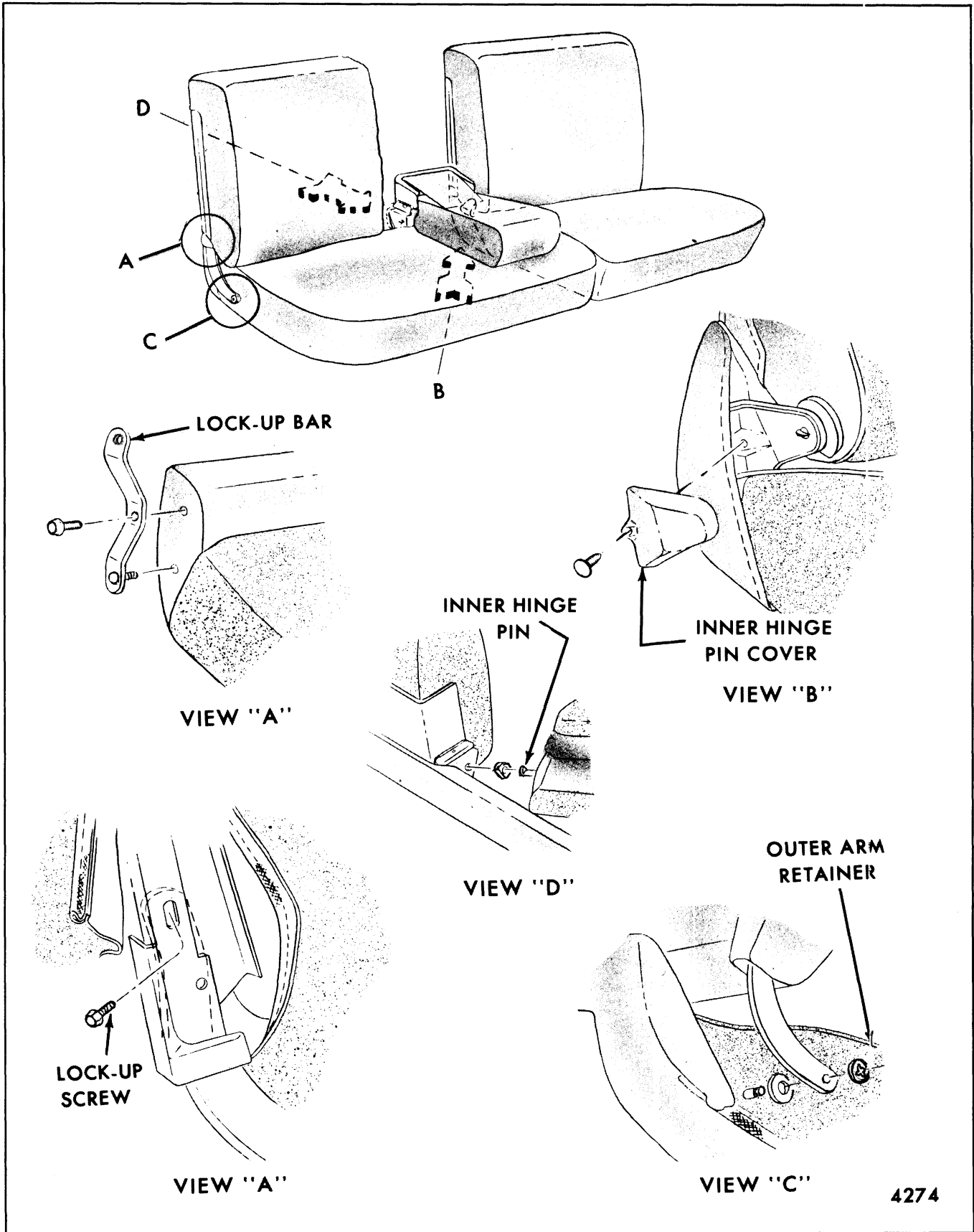


Fig. 9-31-Front Seat Back Attachment (Right or Left) - Four-Door Style 60-40 Seat



## SALON BUCKET SEAT - Oldsmobile 3AJ29 Style

The new salon bucket seat incorporates an adjustable reclining seat back and built in head restraint. The seat back assembly is secured to the seat cushion assembly by exposed hinge assemblies incorporating a unitized reclining mechanism in both the right and left hinge. The right and left hinge reclining mechanism is connected by a control rod which maintains both hinges in the same position. A control knob, located on the outboard side of the seat operates the seat back forward when rotated in a clockwise direction and rearward when rotated counterclockwise.

### Seat Back Assembly - Removal and Installation

1. From under rear of seat detach seat back finishing panel elastic straps (Fig. 9-39).
2. At both right and left sides of seat, remove screws securing seat back to seat back hinge upper arm (Fig. 9-37) and remove seat back assembly from seat cushion.
3. To install seat back assembly, reverse removal procedure.

### Seat Back Reclining Hinge Assembly - Removal and Installation

1. If removing inner hinge assembly and car is equipped with consol, remove seat adjuster-to-floor pan attaching screws and move seat sufficiently to gain access to inner hinge attaching screws.
2. Remove screws securing hinge to seat cushion and seat back (see Fig. 9-37) disengage hinge from control rod and remove hinge assembly.

**NOTE:** Use care not to disengage control rod from opposite hinge.

3. To install hinge assembly, reverse removal procedure. Before engaging hinge with control rod adjust hinge to be in exact same position as opposite hinge. Check operation of reclining seat back to full limits of travel.

### Seat Back Reclining Hinge Control Rod

1. Remove outboard hinge and knob assembly, as described under "Seat Back Reclining Hinge Assembly - Removal and Installation".
2. Pull rod out of seat cushion to remove.

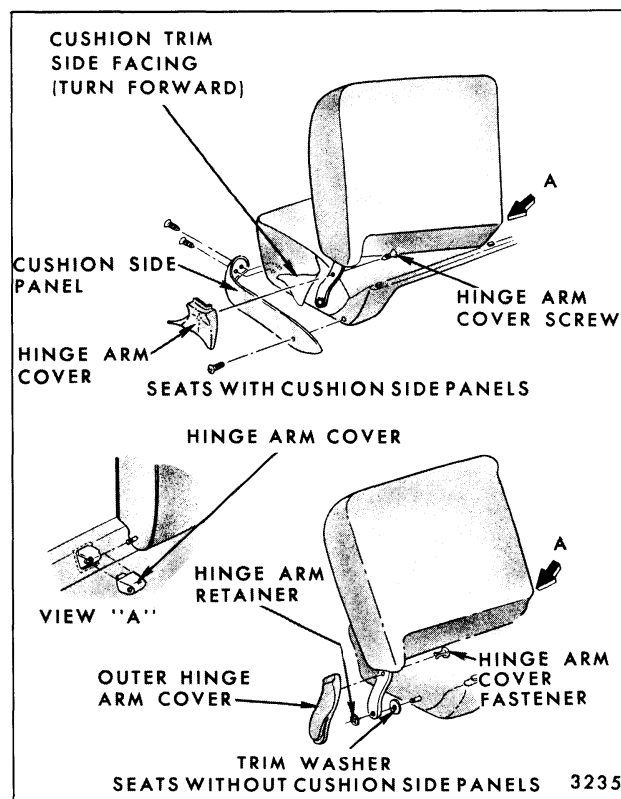


Fig. 9-32-Seat Back Attachment - Two-Door Style Full Width Seat

3. To install control rod, reverse removal procedure. To engage rod with inboard hinge locate and guide rod from under rear of seat cushion.

### Seat Back Reclining Knob Cover, Knob and Hinge Arm Covers - Removal and Installation

1. The lower hinge arm cover on both sides of the seat and the upper hinge arm cover on the inner side of the seat can be removed by removing the hinge arm attaching screws; then, with a putty knife or screwdriver disengage cover retainer on inner surface of hinge (Fig. 9-37).
2. To remove the upper hinge arm cover on the side of the seat with the control knob it is first necessary to remove the control knob as follows:
  - a. Using 3/32" welding rod, bend as shown in Figure 9-38 and insert hooked end of rod behind knob and through one of the slots in knob inner surface; then, pull rod to disengage knob cover from knob.

**NOTE:** It may be necessary to perform this

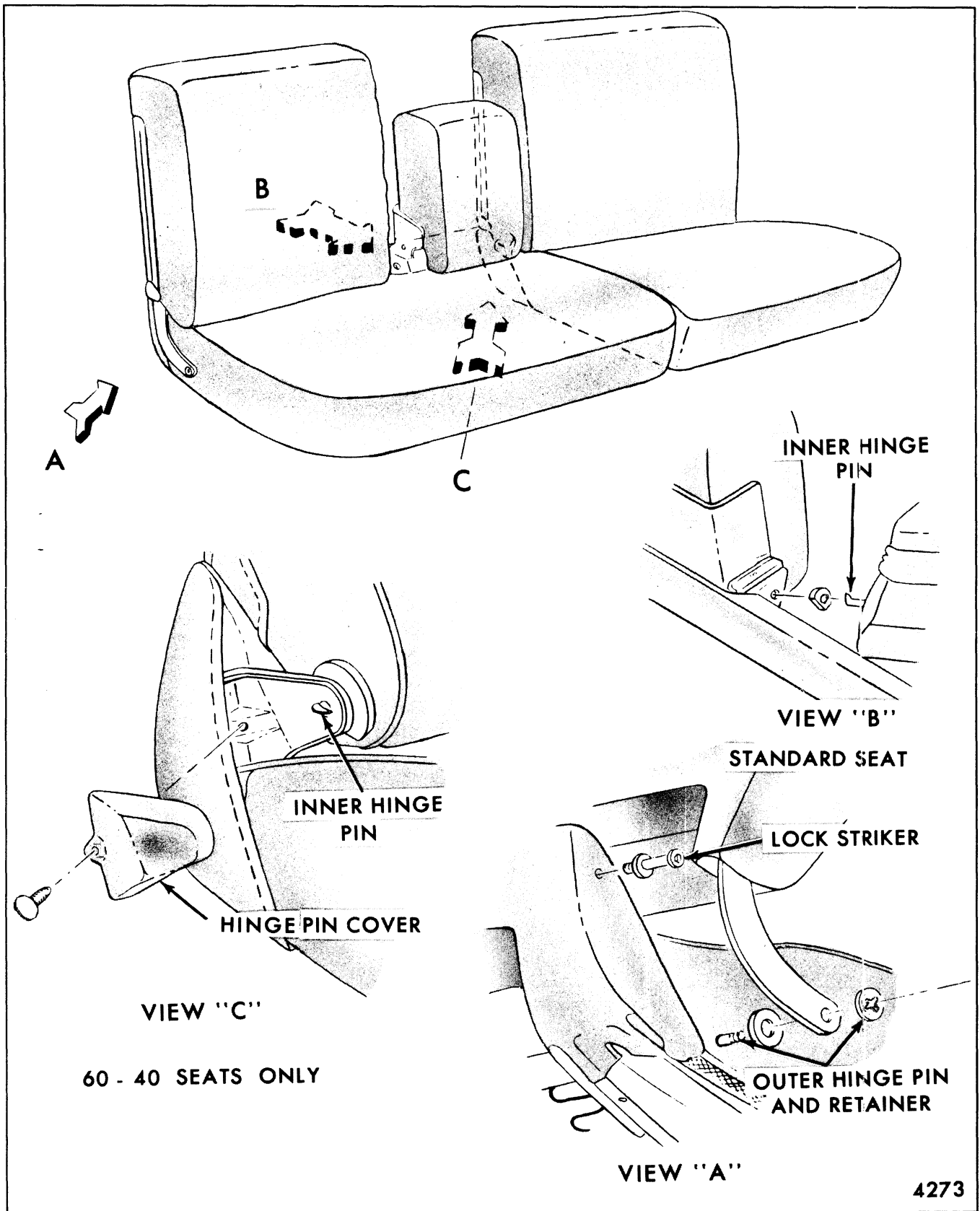


Fig. 9-33-Seat Back Attachment - Two-Door Style Notch Down Center Arm Rest Seat and 60-40 Sea:

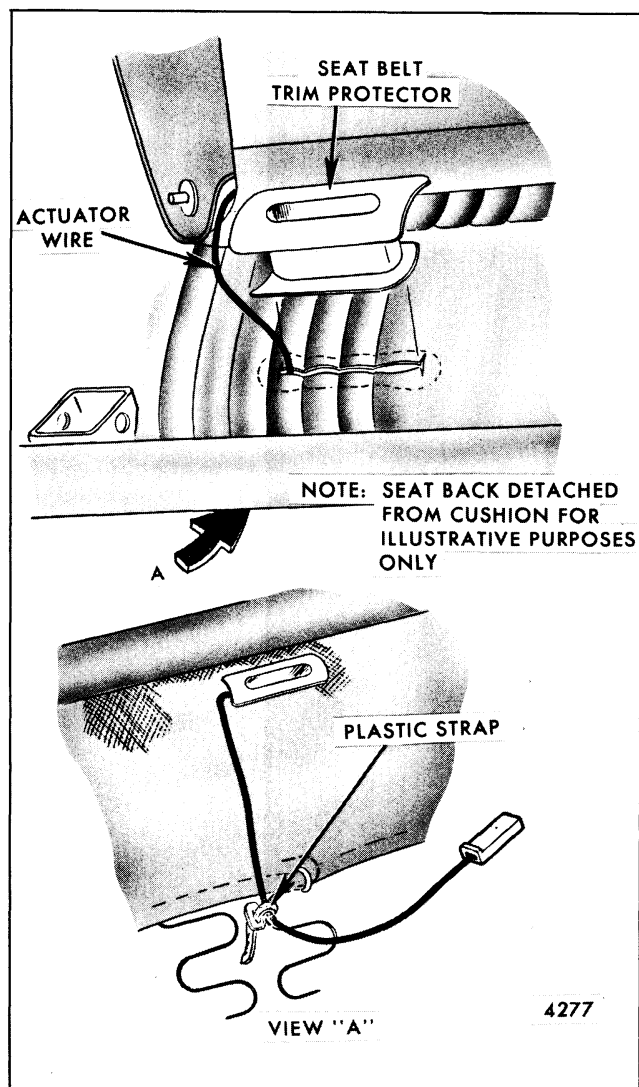


Fig. 9-34-Electric Seat Back Lock Wire Route Through Seat Cushion - Two-Door Style Full Width Conventional Seat

operation at more than one location behind knob to disengage cover.

- b. With knob cover removed, remove 3/16 inch hex internal drive screw (Fig. 9-38) securing knob to control rod and remove outer plate, knob and inner plate (Fig. 9-38).

### Salon Bucket Seat Back Ash Tray and Finishing Panel - Removal and Installation

1. Remove ash tray from housing. Remove two screws securing ash tray housing to seat back frame and remove housing (Fig. 9-39).
2. From under rear of seat detach seat back finishing panel elastic straps (Fig. 9-39).

3. Lift up lower flap of finishing panel and remove two screws securing panel to lower retainers (Fig. 9-39).
4. Lift finishing panel upward to disengage panel from upper retainers (Fig. 9-39) and remove panel from seat back.
5. To install seat back finishing panel or seat back ash tray, reverse removal procedure.

### CUSTOM COMFORT BUCKET SEAT - Pontiac 2AH37 and 2AH29 Styles

The new custom comfort bucket seat incorporates an adjustable reclining seat back and an adjustable lumbar support. The seat back assembly is secured to the seat cushion assembly by exposed hinge assemblies incorporating a unitized reclining mechanism in both the right and left hinge. The right and left hinge reclining mechanism is connected by a control rod which maintains both hinges in the same position. The lower control knob located on the inboard side of the seat operates the seat back forward when rotated in a clockwise direction and rearward when rotated counterclockwise.

The adjustable lumbar support consists of a strong belt anchored to the outboard side of the seat back frame and extending to an adjustable support at the inboard side of the seat back frame. The adjustable support is controlled by a control knob (upper knob), screw guide shaft, guide and guide support. When the control knob is turned in a clockwise direction the belt tightens, increasing support for the lumbar portion of the back. When the control knob is turned counterclockwise the belt loosens providing less lumbar support.

### Custom Comfort Bucket Seat Back Panel - Removal and Installation

1. Remove exposed screws (Fig. 9-40) securing lower portion of seat back finishing panel.
2. Lift panel upward to disengage upper portion of panel from hanger brackets (Fig. 9-40) and remove finishing panel from seat back.
3. To install seat back finishing panel, reverse removal procedure.

### Custom Comfort Bucket Seat Control Knob - Removal and Installation

1. Using a piece of 3/32" welding rod approximately six inches long, form rod as shown in Figure 9-38.

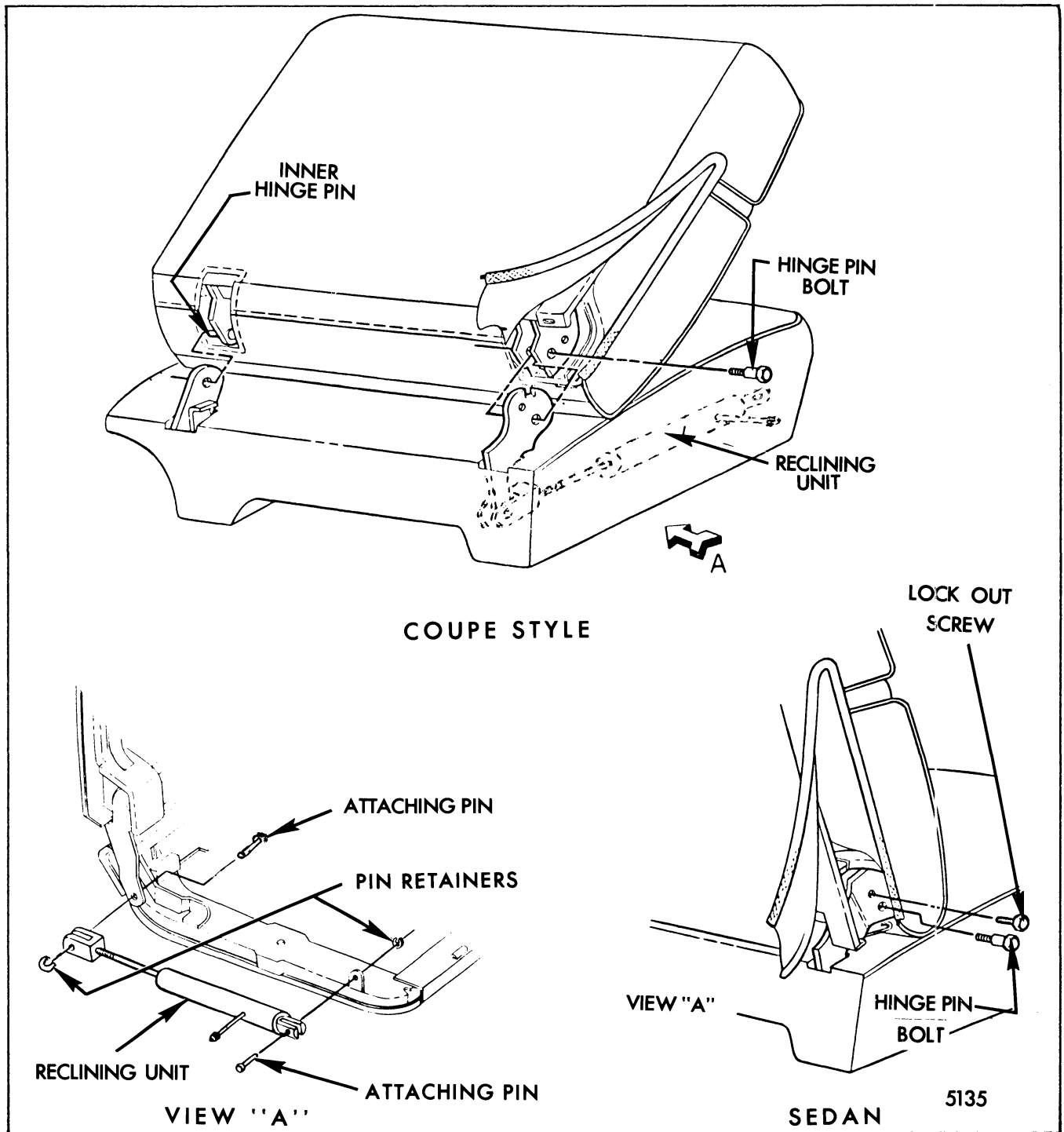


Fig. 9-35-Front Seat Back - 50-50 Seat

2. Insert hooked end of rod behind control knob and through one of the slots in the knob inner surface (Fig. 9-38); then, pull rod to disengage knob cover from knob.

**NOTE:** It may be necessary to perform this oper-

ation at more than one location behind knob to disengage cover.

3. With control knob cover removed, remove 3/16 inch hex internal drive screw (Fig. 9-38) securing knob to rod or shaft; then, remove outer plate, control knob and inner plate (Fig. 9-40).

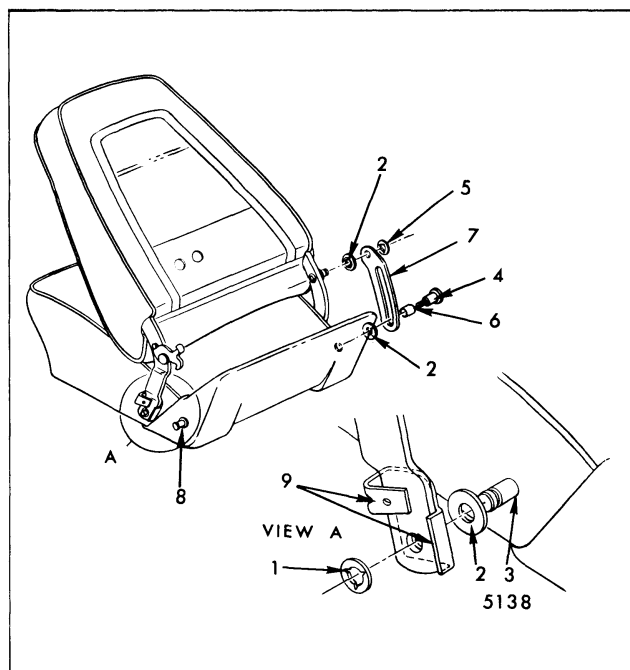


Fig. 9-36-Seat Back Assembly - Standard Bucket Seats

- |   |                                  |
|---|----------------------------------|
| 1. Hinge Arm Retainer                       | 6. Inner Link Lower Bolt Sleeve  |
| 2. Trim Protective Washers                  | 7. Seat Back Inner Arm Link      |
| 3. Hinge Arm Pins (On Seat Cushion)         | 8. Seat Back Lock Striker        |
| 4. Inner Link Lower Attaching Shoulder Bolt | 9. Seat Back Panel Lower Support |
| 5. Inner Link Upper Retainer                |                                  |
4. To install control knob, reverse removal procedure. To install control knob cover, position cover on knob and press cover in firmly.

### Custom Comfort Bucket Seat Back Assembly - Removal and Installation

1. Remove seat back finishing panel, as previously described under "Custom Comfort Bucket Seat Back Panel - Removal and Installation" and remove adjustable lumbar control knob as described under "Custom Comfort Bucket Seat Control Knobs and Knob Covers - Removal and Installation".
2. From both sides of seat back remove two screws securing seat back to hinge upper arm (Fig. 9-41).
3. Swing left side of seat back forward slightly and work lumbar control shaft out of hole in inboard hinge upper arm; then, remove seat back assembly.

4. To install seat back assembly, reverse removal procedure.

### Custom Comfort Seat Back Reclining Hinge - Removal and Installation

1. Remove seat back finishing panel, as described under "Custom Comfort Bucket Seat Back Panel - Removal and Installation".
2. Proceed as follows:
  - a. If removing the hinge with adjustable lumbar control knob, remove control knob, as previously described under "Custom Comfort Bucket Seat Control Knobs and Knob Covers - Removal and Installation".
  - b. If removing the hinge without control knobs, remove upper and hinge finishing covers (Fig. 9-41).
3. Remove hinge upper arm-to-seat back attaching screws (Fig. 9-41, Item 16).
4. Proceed as follows:
  - a. On two-door styles, remove hinge lower arm retainer (Fig. 9-41, Item 1).
  - b. On four-door styles, remove hinge-to-lock up link nut (Fig. 9-41, Item 10).
5. Disengage hinge from control rod and remove hinge assembly.

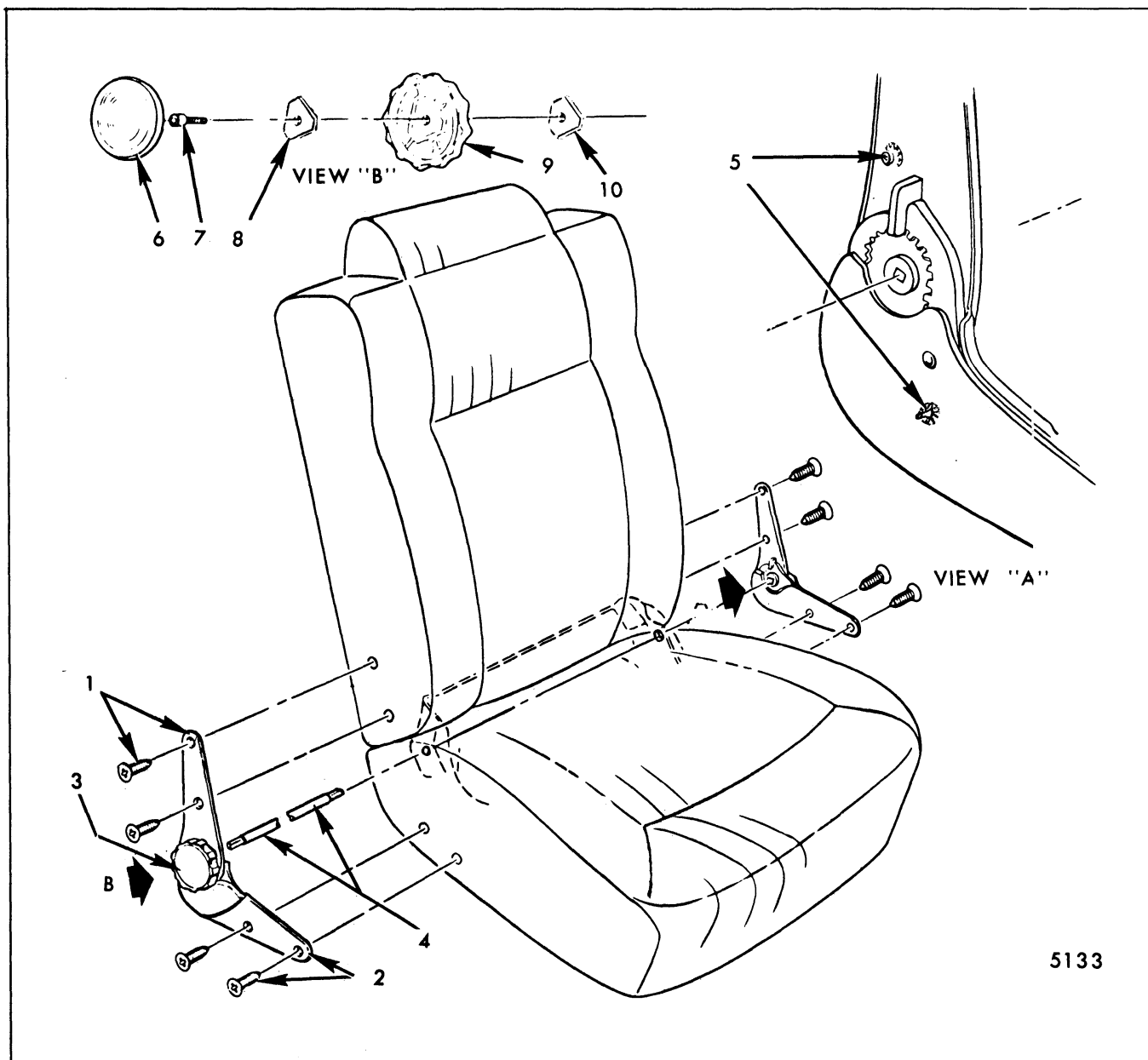
**NOTE:** Use care not to disengage control rod from opposite hinge.

6. To install hinge assembly, reverse removal procedure. Before engaging hinge with control adjust hinge to align with opposite hinge.

If on two-door styles hinge lower arm front retainer has been damaged, install new retainer. Check operation of reclining seat back to full limits of travel.

### Custom Comfort Bucket Seat Back Lumbar Support Guide Assembly and Strap - Removal and Installation

1. Remove seat back panel, as previously described.
2. Remove lumbar support control knob, as described under "Custom Comfort Bucket Seat Control Knob - Removal and Installation".



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Fig. 9-37-Salon Bucket Seat Reclining Back Hinge (Passenger Seat Shown)

- |   |                              |                                 |                              |
|---|------------------------------|---------------------------------|------------------------------|
| 1. Hinge Upper Arm and Cover Attaching Screws | 3. Reclining Control Knob    | 6. Control Knob Cover           | 9. Control Knob              |
| 2. Hinge Lower Arm and Cover Attaching Screws | 4. Hinge Control Rod         | 7. Control Knob Attaching Screw | 10. Control Knob Inner Plate |
|   | 5. Hinge Arm Cover Retainers | 8. Control Knob Outer Plate     |                              |
3. Remove three guide-to-seat back frame attaching screws (Fig. 9-42). Work guide assembly towards opposite side of seat to disengage guide shaft from hole in seat back frame; then, remove guide assembly from seat back.
4. Detach strap from guide assembly.
5. To remove support strap, remove hog rings securing trim cover to seat back frame in area of strap attachment (Fig. 9-42), and turn back trim cover sufficiently to gain access to screws securing strap retainer to seat back frame side bar (Fig. 9-42).

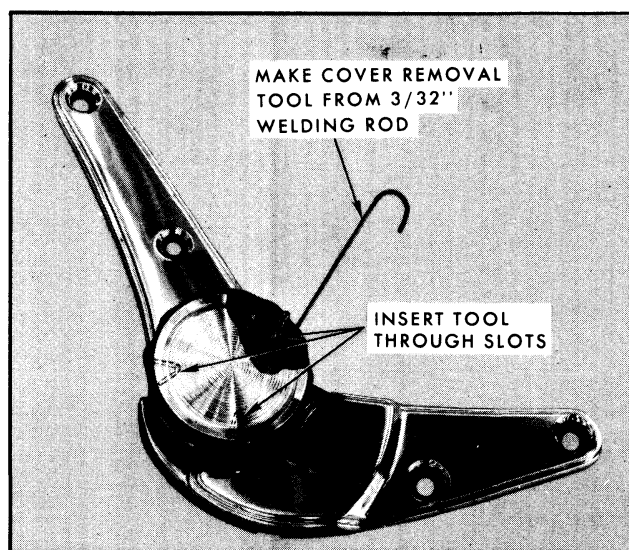


Fig. 9-38-Salon and Custom Comfort Bucket Seat Reclining Hinge Control Knob

6. Remove right seat back hinge upper arm upper attaching screw and remove two screws securing strap retainer to seat back side bar (Fig. 9-42); then, remove strap from seat back.
7. To install lumbar support strap and/or guide assembly, reverse removal procedure.

## FRONT SEAT BACK MANUALLY OR ELECTRICALLY OPERATED LOCK (Right or Left) - All Two-Door Styles with Full Width, 60-40 or 40-40 Seats

### Description

All two-door styles are equipped with either manually operated front seat back locks or optional (on "A, B, C and E" styles) electrically operated seat back locks. The manually operated seat back locks on "F, A and X" body styles are operated by a control lever at the lower rear outboard corner of the seat back; on "B, C and E" styles the manually operated lock is operated by a control handle on the upper outboard side of the seat back. The electrically operated seat back locks are operated by an electrical solenoid attached to the seat back lock frame. When either front door is opened, a jamb switch at the front body hinge pillar energizes the solenoid at both seat back locks which unlocks both seat backs. When both doors are closed, the solenoids are de-energized and return springs in the solenoid return the lock to a locked position.

### Removal and Installation

1. On seats with full seat back panel or detachable

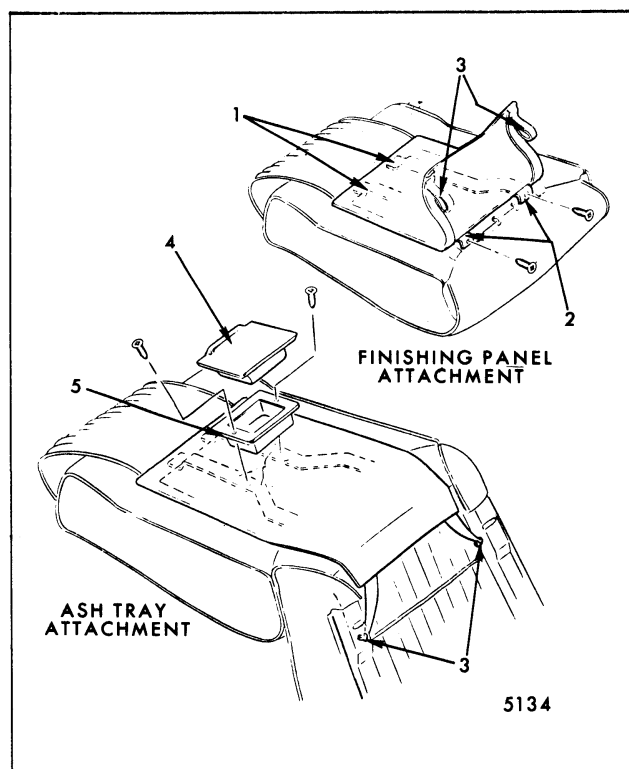


Fig. 9-39-Salon Bucket Seat Back Ash Tray and Finishing Panel

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 1. Finishing Panel Upper Retainers | 3. Finishing Panel Elastic Straps |
| 2. Finishing Panel Lower Retainers | 4. Ash Tray                       |
|                                    | 5. Ash Tray Housing               |

seat back trim panel, remove hog rings securing trim along bottom and sides of trim.

2. On seats with one piece (envelope type) trim cover remove front seat back assembly from front seat cushion assembly, as previously described.
3. Remove front seat back outer side panel and side panel lower support, where present.
4. On seats with electrically operated locks, remove manual override handle and escutcheon.
5. Remove hog rings securing seat back front and rear trim facings and foam pad facing along bottom of seat back; then, turn up trim and carefully pull out foam pad sufficiently to gain access to lock attaching bolts (Fig. 9-43 or 9-44).
6. On manually operated seat back lock, disengage lock connecting rod clip (Fig. 9-43) and detach rod from lock. On electrically operated seat back lock, disconnect feed connector from lock solenoid.

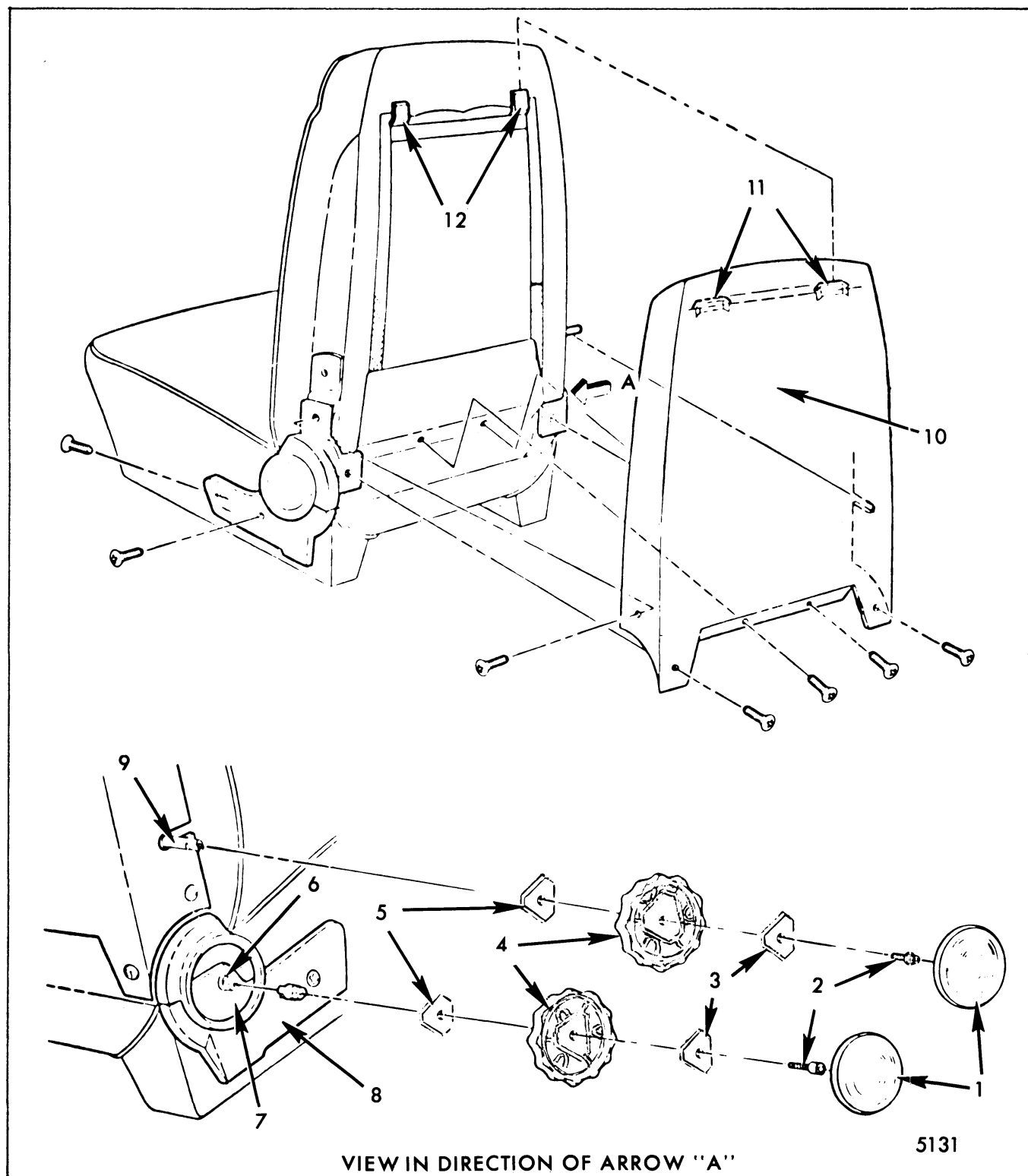


Fig. 9-40-Custom Comfort Bucket Seat Back Panel, Control Knobs and Finishing Covers (Drivers Side Shown)

- |                         |                          |                          |                                     |
|-------------------------|--------------------------|--------------------------|-------------------------------------|
| 1. Knob Cover           | 5. Knob Inner Plate      | 8. Lower Finishing Cover | 11. Seat Back Panel Upper Hangers   |
| 2. Knob Attaching Screw | 6. Reclining Control Rod | 9. Lumbar Control Shaft  | 12. Seat Back Upper Hanger Brackets |
| 3. Knob Outer Plate     | 7. Upper Finishing Cover | 10. Seat Back Panel      |                                     |
| 4. Control Knob         |                          |                          |                                     |



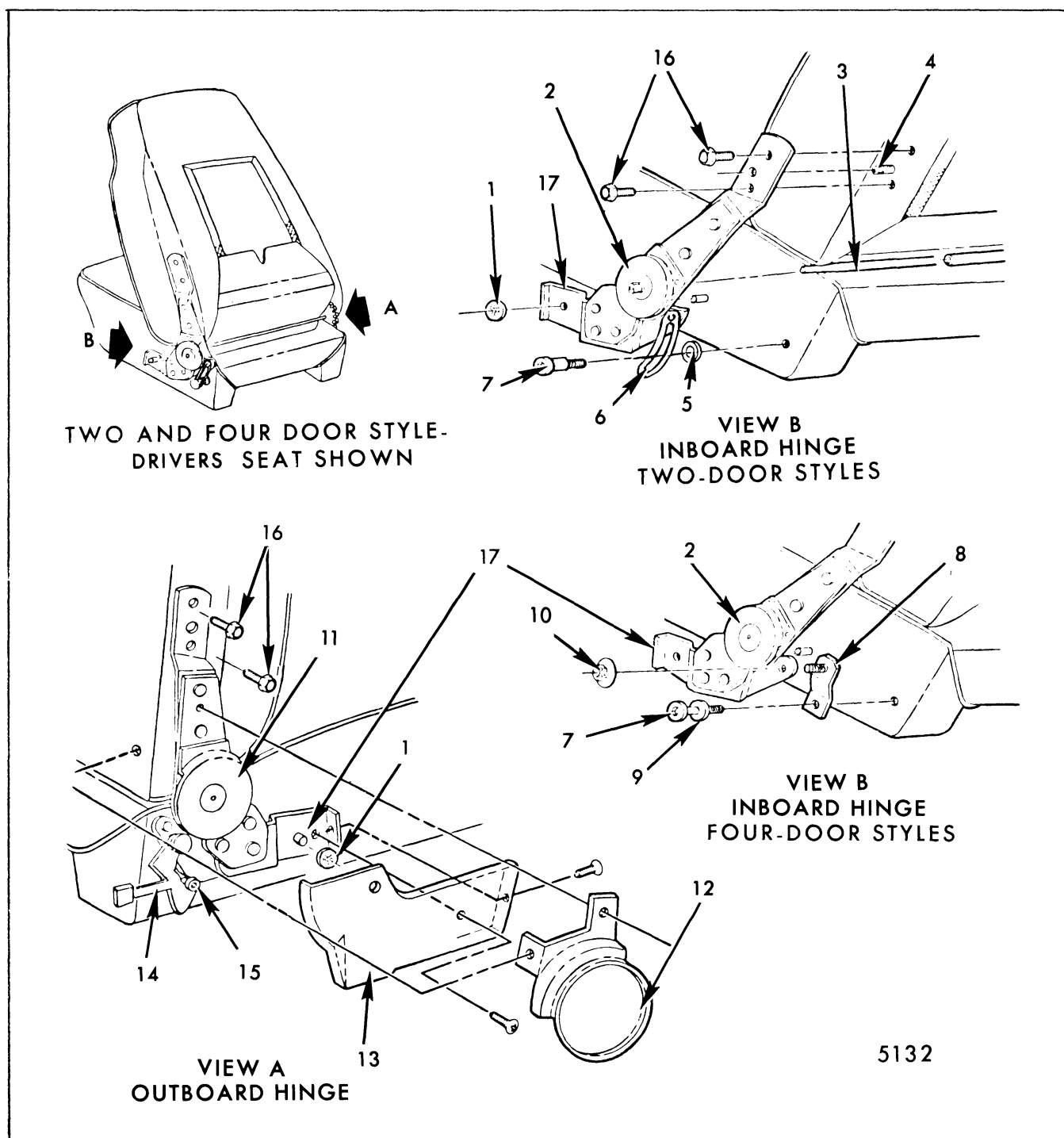


Fig. 9-41-Custom Comfort Bucket Seat Back Reclining Hinge Assemblies (Drivers Side Shown)

- |  |   |   |   |
|--|---|---|---|
| 1. Hinge Lower Arm<br>Front Retainer   | 6. Hinge Stop Link (Two<br>Door Styles Only)        | 10. Hinge-to-Lock-Up<br>Link Nut (Four-Door<br>Styles Only) | 14. Seat Back Lock<br>(Two-Door Styles<br>Only) |
| 2. Inner Reclining<br>Control Hinge    | 7. Hinge Stop Striker                               | 11. Outer Reclining<br>Control Hinge                        | 15. Seat Back Lock<br>Striker                   |
| 3. Inner-to-Outer Hinge<br>Control Rod | 8. Hinge Lock-Up Link<br>(Four-Door Styles<br>Only) | 12. Outer Hinge Upper<br>Finishing Cover                    | 16. Hinge Upper Arm<br>Attaching Screw          |
| 4. Lumbar Guide<br>Adjusting Shaft     | 9. Striker Washer<br>(Four-Door Styles<br>Only)     | 13. Hinge Lower<br>Finishing Cover                          | 17. Hinge Lower Arm                             |
| 5. Hinge Stop Link<br>Striker Washer   |   |   |   |

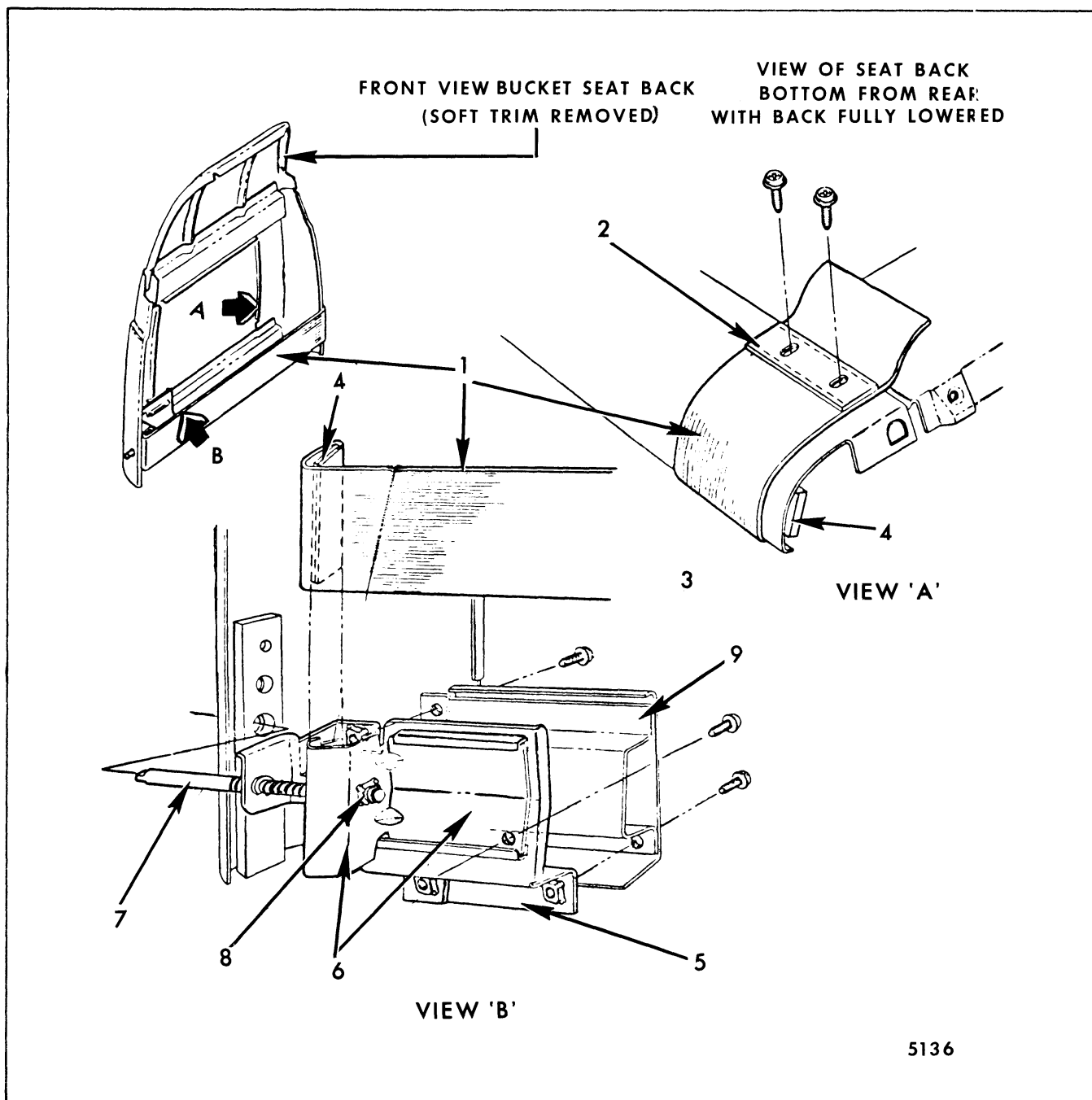


Fig. 9-42-Custom Comfort Bucket Seat Back Lumbar Support Guide Assembly and Strap

- |  |                                |                           |                    |
|--|--------------------------------|---------------------------|--------------------|
| 1. Lumbar Support Strap (Strap slides into guide as shown) | 3. Seat Back Frame Side Bar    | 5. Guide Support          | 8. Guide Shaft Nut |
| 2. Strap Retainer  | 4. Support Strap Reinforcement | 6. Guide                  | 9. Seat Back Frame |
|  |                                | 7. Guide Shaft (Threaded) |                    |

**NOTE:** To disengage clip it is usually necessary to damage or break clip.

7. Remove seat back lock attaching bolts (Fig. 9-43 for manual lock, Fig. 9-44 for electric lock); then, remove lock assembly from seat back.

8. To install, reverse removal procedure. If rod to lock retaining clip is damaged, install new clip. Check for proper operation of seat back lock.

**NOTE:** The manually operated seat back locks should lock with no more than 10 lbs. rearward

## ELECTRIC SEAT BACK LOCK DIAGNOSIS CHART - TWO-DOOR STYLE FULL WIDTH, 60-40 OR 40-40 SEATS

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat back lock does not lock when doors are closed.	<p>1. Current at actuator solenoid does not cut off - jamb switch remains open.</p> <p>2. Seat back relay contacts sticking.</p> <p>3. Seat back does not return to upright position far enough to trip lock into locked position. Check for excessive trim build-up; also check inboard bumper clearance.</p>	<p>1. Refer to Electrical Checking Procedure - where required, install new jamb switch.</p> <p>2. Refer to Electrical Checking Procedure - where required, install new relay.</p> <p>3. Specified inboard bumper clearance 1/16" - where required install thinner bumper. Locking effort applied rearward at upper outboard corner of seat back is 0-10 lbs. maximum.</p>
2. Seat back lock will not unlock when door(s) are open.	<p>1. No current at actuator solenoid - blown fuse, defective jamb switch or seat back relay, or short in wiring.</p> <p>2. Bind in lock or lock linkage.</p>	<p>1. Refer to Electrical Checking Procedure.</p> <p>2. Locate and eliminate bind or, where required, install new lock assembly.</p>
3. Seat back lock unlocks but solenoid flutters or solenoid circuit breaker cuts in and out.	<p>1. Bind in lock or linkage which does not allow solenoid plunger to completely deactivate pull in coil.</p> <p>2. Actuator solenoid plunger is not completely deactivating pull in coil with no bind present in lock or linkage. Lock operates okay manually.</p>	<p>1. Locate bind or interference and eliminate, or where required install new lock.</p> <p>2. Check solenoid as described under "Electrical Checking Procedure" - Check if solenoid is adjusted properly on lock - see "Seat Back Electric Lock Solenoid and Support Assembly" - Step 3 and 4. Where required replace solenoid assembly.</p>

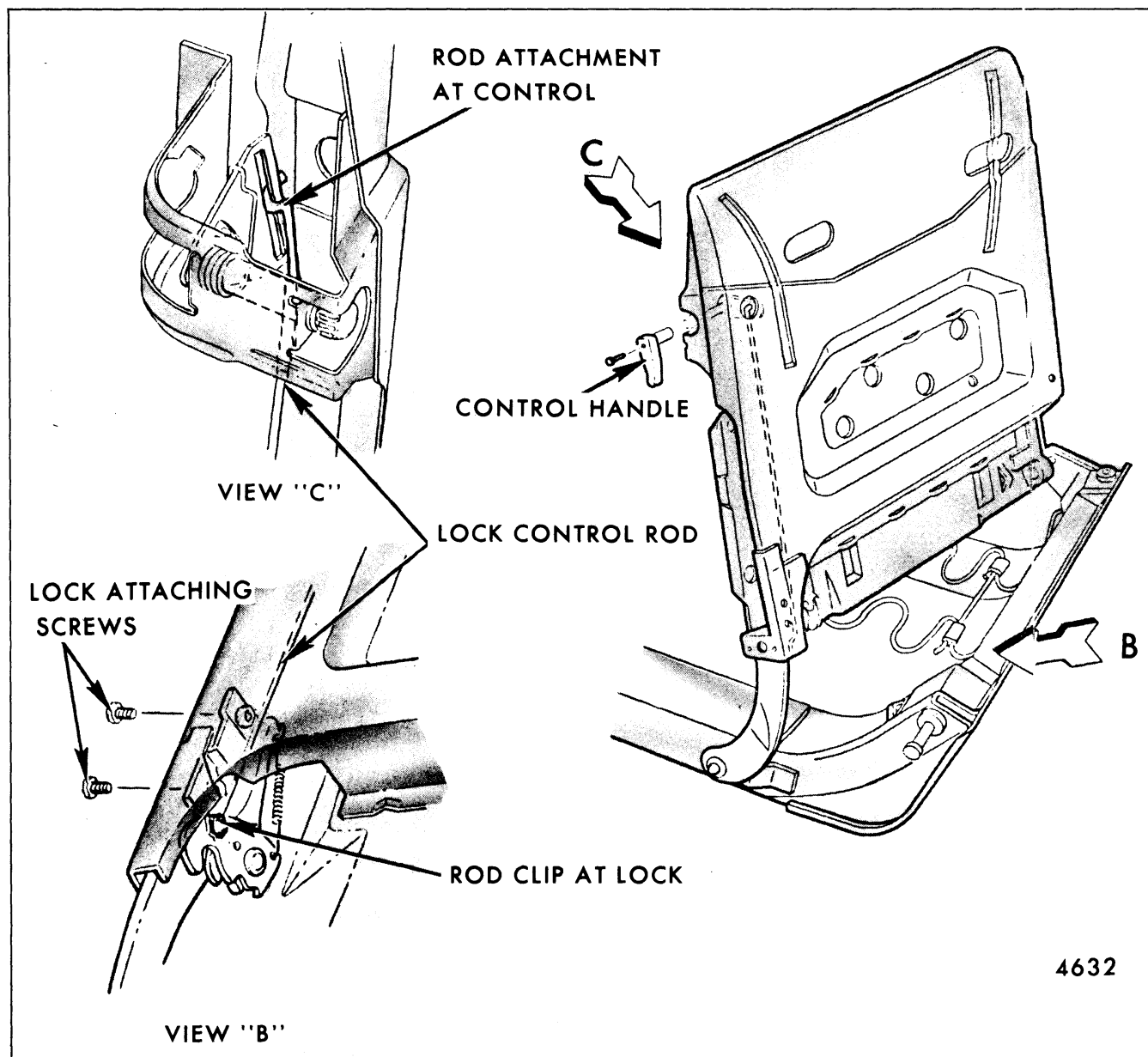


Fig. 9-43-Front Seat Back Manually Operated Lock - "B, C and E" Two-Door Styles, Full Width, 60-40 or 40-40 Seats

effort applied at the top outboard corner of the seat back. The electrically operated seat back locks should remain locked after either door is opened, then closed.

### FRONT SEAT BACK MANUALLY OPERATED LOCK CONTROL AND LOCK ROD - Two-Door Styles with Full Width, 60-40 or 40-40 Seats with Manually Operated Seat Back Locks

#### Removal and Installation

1. On styles with one piece (envelope type) seat

back trim cover remove front seat back assembly, as previously described. Remove seat back side panel where present. Remove hog rings securing trim cover at bottom of seat back and pull trim up sufficiently to gain access to lock and lock control.

2. On styles with full seat back panel, remove lock control handle; then, remove seat back panel.
3. On styles with seat back panel or detachable rear trim facing, remove hog rings securing seat back panel or trim facing along bottom and sides of seat. If removing lock, control-to-lock rod on any style or lock control on Cadillac styles turn

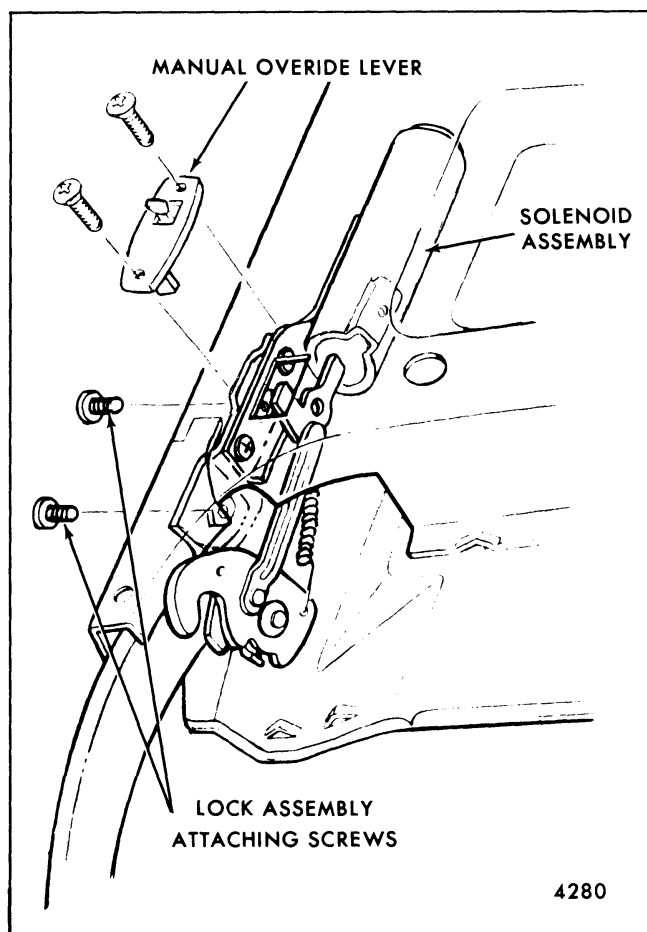


Fig. 9-44-Front Seat Back Electrically Operated Lock - "A, B and C" Two-Door Styles, Standard Full Width Seat

back seat trim sufficiently to gain access to lock control. If removing lock control on any style except Cadillac remove seat back trim cover and foam pad assemblies.

4. To remove seat back lock to control connecting rod, disengage rod clip at lock (Fig. 9-43, View "B"); then rotate rod counterclockwise on drivers seat back of clockwise on passengers seat back to disengage hooked upper end of rod from slot in control plate and remove connecting rod (see Fig. 9-43).
5. To remove seat back lock control on Cadillac styles, remove control attaching screws and remove control. To remove lock control on all styles except Cadillac, scribe position of control assembly on seat back side bar. Using a spot weld cutter tool J- 8943-01 or equivalent, drill out three spot welds securing lock control and remove control.
6. To install lock control on Cadillac styles, reverse removal procedure. To install lock control on all styles except Cadillac, position and clamp new

control assembly to seat back frame side bar in SAME position as original control assembly. Braze new control assembly to seat back frame side bar at the three original weld locations.

7. To install control-to-lock rod position rod up through seat back frame bar; then, insert upper hook end of rod into slot in control plate and rotate rod clockwise on drivers seat back or counterclockwise on passengers seat back to fully engage hook end of rod in slot of control plate. Engage lower end of rod to lock hook and install retaining clip.

**NOTE:** If clip is damaged or does not retain properly, install new clip.

8. After assembly, check for proper operation of seat back lock, the seat backs should lock with no more than 10 lbs. of rearward effort applied at the top outboard corner of the seat back.

### SEAT BACK ELECTRIC LOCK SOLENOID AND SUPPORT ASSEMBLY - Two-Door Styles with Full Width, 60-40 or 40-40 Seats

#### Removal and Installation

1. Remove front seat back electric lock assembly with attached solenoid and support from seat, as previously described.
2. Remove small position lock screw and two solenoid support-to-lock attaching screws; then, disengage solenoid plunger bar from lock link (Fig. 9-45) and remove assembly from lock.
3. To install solenoid and support assembly, engage solenoid plunger bar to lock link; then, install loosely two solenoid support-to-lock attaching screws (Fig. 9-45). With lock hook tight against stop tab (see Fig. 9-45) extend solenoid plunger bar all the way out of solenoid; then, adjust solenoid support until the lock link rivet just contacts bottom of slot in solenoid plunger bar (see Fig. 9-45) and tighten securely solenoid support attaching screws.

**CAUTION:** Carefully drill a new position lock screw hole (9/64") through both solenoid support and lock frame in area where previous lock screw was located and install securely position lock up screw.

**WARNING:** CHECK OPERATION OF BOTH ELECTRIC ACTUATED SEAT BACK LOCKS. IF EITHER LOCK DOES NOT LOCK OR UNLOCK PROPERLY REFER TO "ELECTRIC SEAT BACK LOCK TROU-

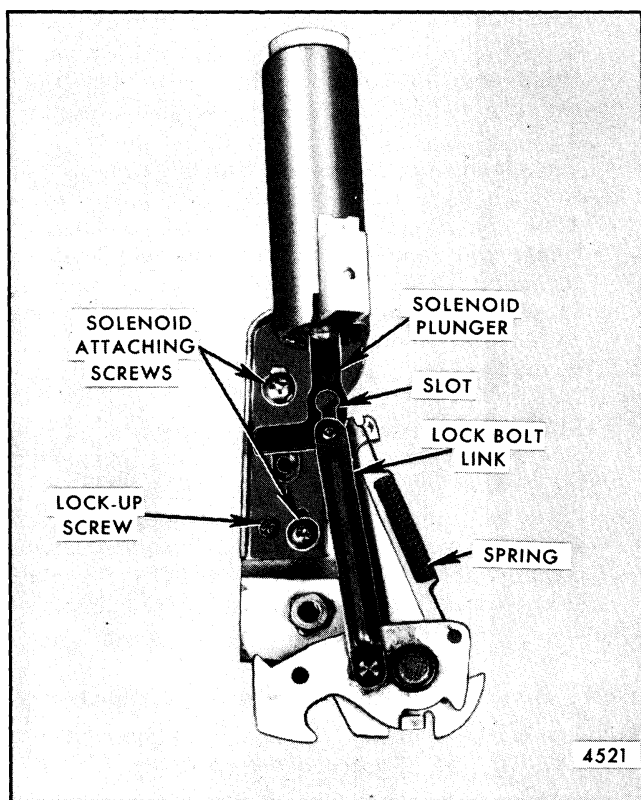


Fig. 9-45-Front Seat Back Electric Lock Solenoid and Support Assembly - All Two-Door Styles with Standard Full Width or 60/40 Seats

#### BLE DIAGNOSIS CHART - CONVENTIONAL SEATS"

**NOTE:** When either door is opened, then closed, both seat back locks should remain locked.

### FRONT SEAT BACK HEAD RESTRAINT - Full Width, 60-40, 50-50 or 40-40 Seat (Driver or Passenger Side)

#### Description

Head restraints for the standard full width, 60-40, 50-50 or 40-40 seat are single post type, which can be adjusted to two positions (low or high). To remove head restraints it is necessary to follow the procedure described below:

#### Removal and Installation

1. Raise head restraint to full "up" position.
2. Remove head restraint post escutcheon attaching screws.
3. Lift escutcheon upward; then insert a narrow

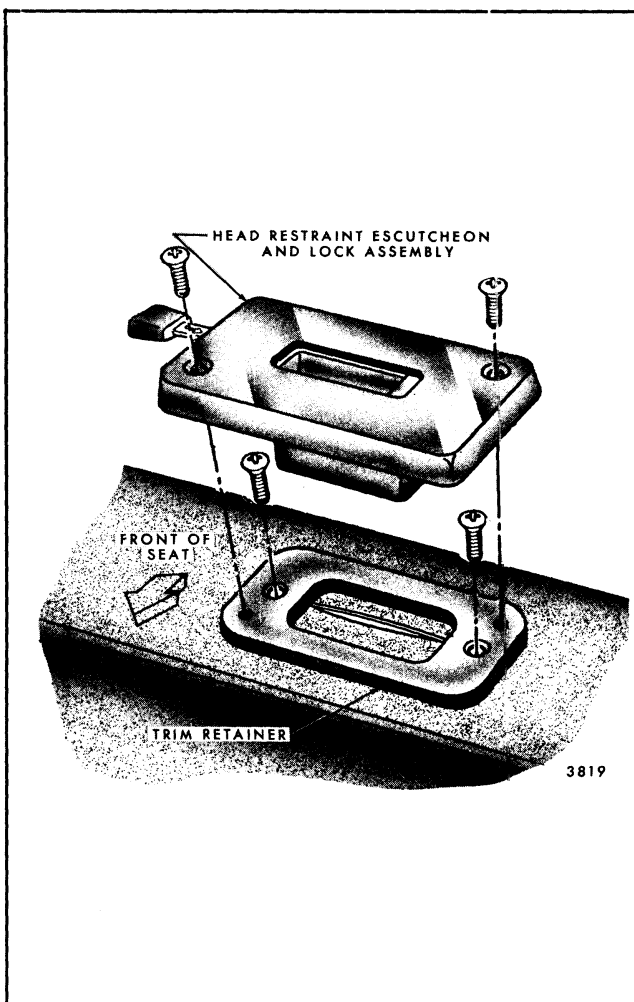


Fig. 9-46-Front Seat Back Head Restraint Retainer, Lock and Escutcheon - Conventional and 60-40 Seats

screwdriver down the left side of head restraint post sufficiently to depress lock spring and remove head restraint.

4. To install head restraint, insert post into guide and push down to full down position. Check that lock spring engages and prevents head restraint from being removed.

### FRONT SEAT BACK HEAD RESTRAINT LOCK AND ESCUTCHEON ASSEMBLY - Full Width, 60-40, 50-50 and 40-40 Seats

#### Removal and Installation

1. Remove head restraint, as previously described.
2. Remove lock and escutcheon assembly attaching screws and remove lock and escutcheon (Fig. 9-46).

3. To install, reverse removal procedure. Check operation of head restraint.

### FRONT SEAT BACK HEAD RESTRAINT GUIDE TUBE - Full Width, 60-40, 50-50 and 40-40 Seats

The front seat back head restraint guide tube is a plastic tube inserted through slots in a guide tube support assembly. The guide tube support assembly, which incorporates a riveted-on tension spring, is welded to the seat back frame.

#### Removal and Installation

1. Remove front seat back and head restraint lock and escutcheon assembly, as previously described. Remove trim retainer (see Fig. 9-46).
2. On seat backs with one piece (envelope type) seat back trim assembly, remove seat back assembly, as previously described; then, as a bench operation remove hog rings securing trim at bottom of seat back and pull up trim sufficiently to

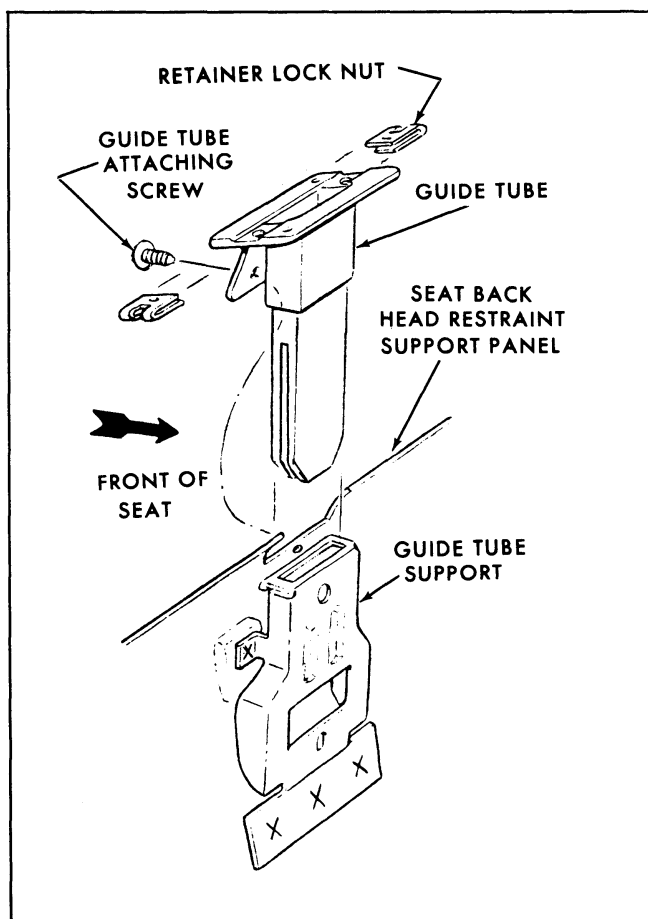


Fig. 9-47-Head Restraint Guide Tube Typical of All Conventional Seats

gain access to head restraint support or guide tube. On seat backs with seat back panel or detachable rear trim facing, remove seat back panel and detach back trim sufficiently to gain access to head restraint support or guide tube.

3. Remove screw securing guide tube and slide guide tube out of support (Fig. 9-47).
4. To install head restraining, guide tube reverse removal procedure.

### FRONT SEAT CENTER ARM REST AND CURTAIN ASSEMBLY - Front Seat with Standard Full Width Seat Back

#### Removal and Installation

1. Place center arm rest in down position.
2. At top of arm rest curtain, remove hog rings securing curtain to flange of support plate and pull curtain forward to expose screws securing arm rest to support linkage (Fig. 9-48).
3. Remove arm rest-to-support linkage screws and remove arm rest and curtain from seat (Fig. 9-48).
4. To install, reverse removal procedure.

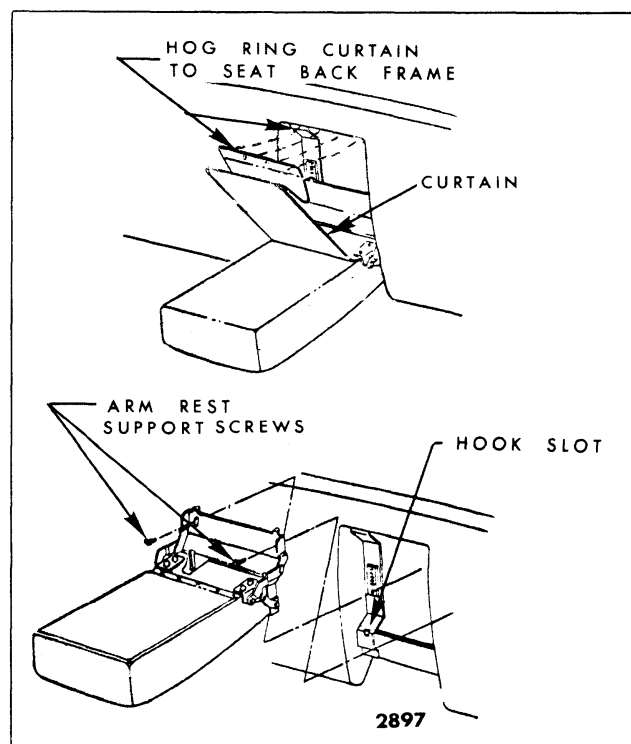


Fig. 9-48-Front Seat Back Center Arm Rest

## CENTER ARM REST AND SUPPORT ASSEMBLY - Front Seat with Standard Full Width Seat Back

### Removal and Installation

1. Place center arm rest in down position.
2. At top of arm rest curtain, remove hog rings securing curtain to flange of support plate (Fig. 9-48).
3. Remove two screws securing arm rest to supports on seat back (Fig. 9-48); then, carefully lift arm rest and linkage upward to disengage hooks of arm rest from slots in supports and remove assembly from seat.
4. To install, reverse removal procedure. Prior to installing curtain screws check alignment and operation of arm rest.

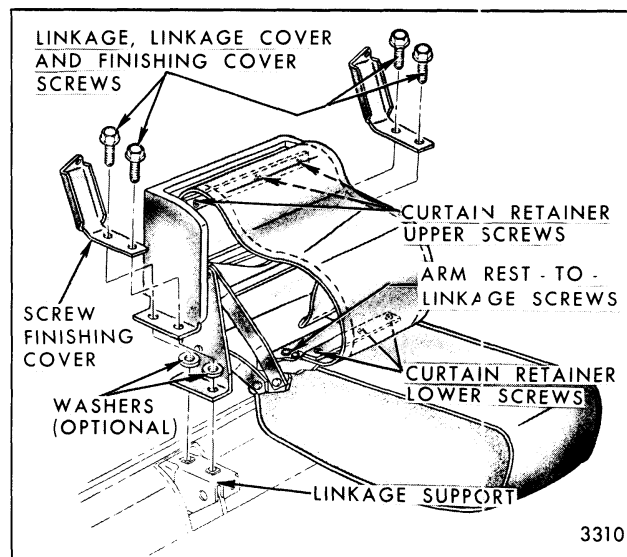


Fig. 2-49-Front Seat Center Arm Rest (Full Width Seat with Notch Down Seat Back)

## FRONT SEAT CENTER ARM REST AND CURTAIN ASSEMBLY - Front Seat with Notch Down Seat Back

### Removal and Installation

1. Lower arm rest to within approximately two (2) inches of full down position.
2. Carefully pull curtain back sufficiently to remove screws securing center arm rest to linkage and loosen outer screws securing curtain lower retainer to arm rest (Fig. 9-49).
3. Disengage arm rest from support linkage and turn arm rest upside-side down on trim panel finishing cover. Remove arm rest curtain upper retainer screws (Fig. 9-49); then, remove arm rest and curtain from seat.
4. To install, reverse removal procedure.

3. On two-door styles, push one seat back to full forward position. Carefully pull up front of screw finishing cover sufficiently to expose arm rest linkage and linkage cover attaching screws; then, remove screws (Fig. 9-49). Repeat this operation on opposite side of arm rest; then, carefully remove arm rest linkage cover and linkage assembly from seat.

**NOTE:** If washers are present between arm rest linkage and linkage supports on seat (Fig. 9-49), note location and number of washers used to facilitate installation in same position. Washer(s) are used to align arm rest to front seat back(s).

4. To install, reverse removal procedure. Prior to bending down screw finishing covers, check alignment and operation of arm rest. Where necessary to align arm rest with seat back(s) install washer(s), as required, between arm rest support and support on seat (Fig. 9-49).

## FRONT SEAT CENTER ARM REST ASSEMBLY - Front Seat with Notch Down Seat Back

### Removal and Installation

1. Place arm rest in up position.
2. Working between arm rest and seat back, remove fastener at both sides of arm rest securing front end of screw finishing covers (Fig. 9-49).

## FOOT REST ASSEMBLY - Cadillac 6CB69 Styles

The folding foot rest assemblies shown in Figure 9-50, are secured to the seat back by hinges. To remove foot rest assembly, remove hinge-to-seat back attaching screws from both sides of foot rest (Fig. 9-50) and remove foot rest assembly from seat back. To remove trimmed foot rest board remove hinge-to-board attaching screws (Fig. 9-50) and remove hinges from foot rest board. To install, reverse removal procedure. When installing foot rest



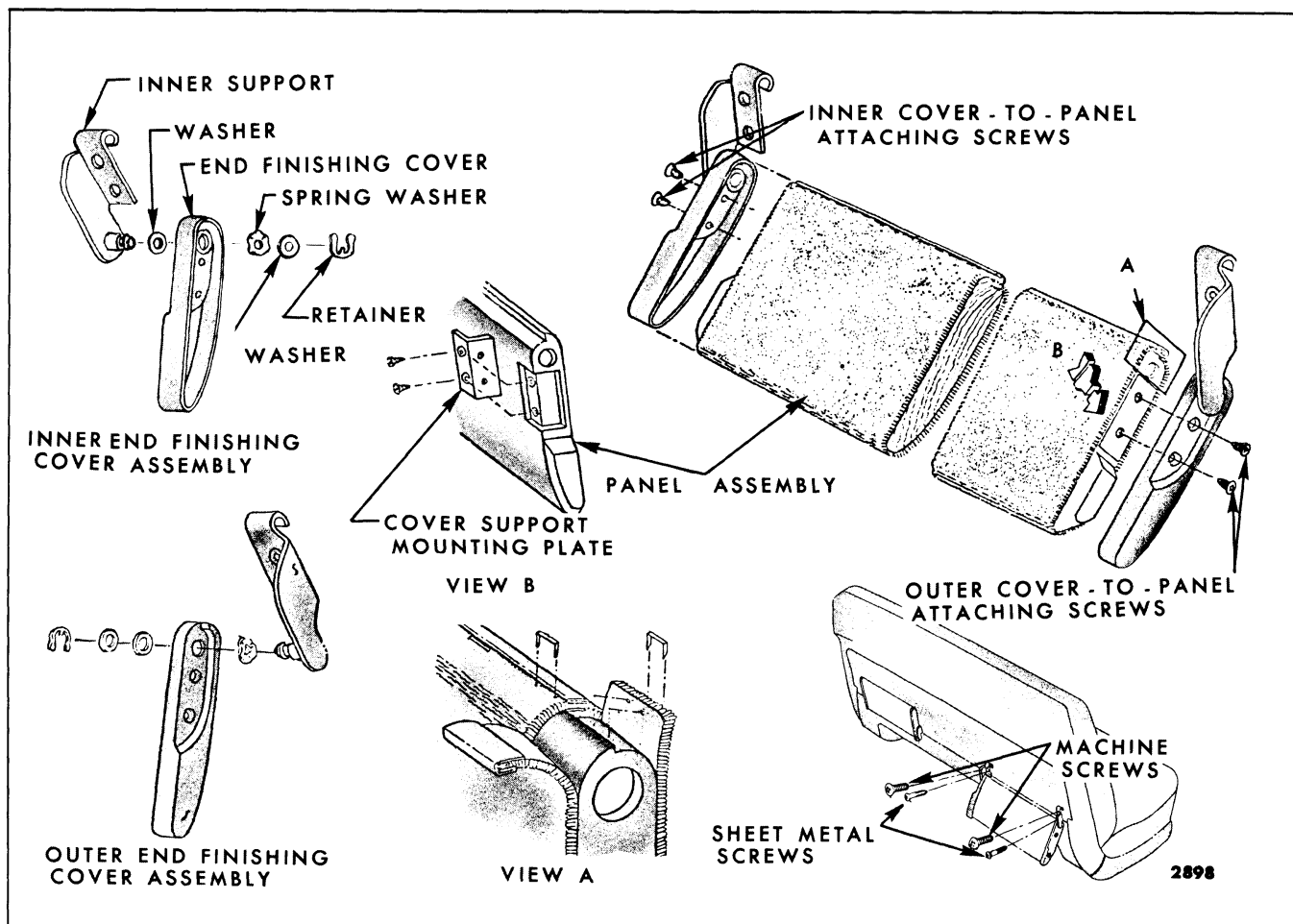


Fig. 9-50-Foot Rest Assembly - Cadillac 6CB69 Styles

hinge-to-seat back attaching screws, install machine thread screws in upper attaching hole at each hinge.

### ADJUSTABLE FRONT SEAT BACK ASSEMBLY (Drivers Side Only) - Chevrolet "F" Body Style

#### Description

The optional adjustable front seat back (drivers side) can be adjusted to two positions by means of a control handle located at the right rear of the drivers seat cushion. With the control handle in the full rearward position the seat back is adjusted to the full rearward position; when the control handle is actuated (rotated) forward the seat back is adjusted forward to a normal or full position.

#### Removal and Installation-Handle, Cams, Cam Rod, Detent Plate and Spring

The handle, outer cam, cam rod, detent plate, inner cam and spring are removed in the order stated.

1. At inner side of seat remove handle screws (see Figs. 9-51 and 9-53) and remove handle.

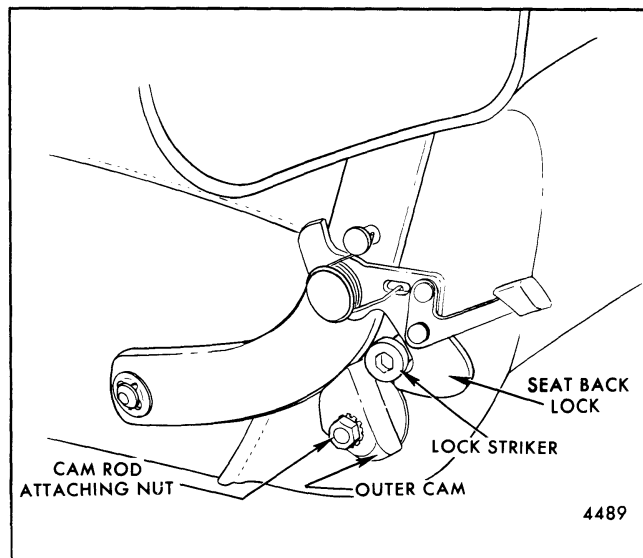


Fig. 9-51-Adjustable Drivers Seat Back - Inner Side - Chevrolet "F" Styles

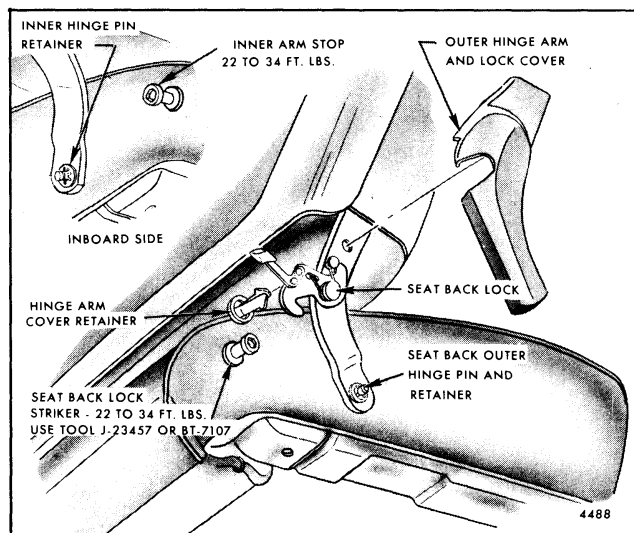


Fig. 9-52-Adjustable Drivers Seat Back - Outer Side - Chevrolet "F" Styles

cam to cam rod (Fig. 9-52) and remove handle and cam (see Figs. 9-52 and 9-53).

- To remove cam rod, pull rod out of seat cushion from inner side of seat (see Fig. 9-53).

**NOTE:** It may be necessary to turn cam rod until keyed end of rod can be pulled through key way in hole of seat frame. Where required, remove inner cam and spring from cam rod.

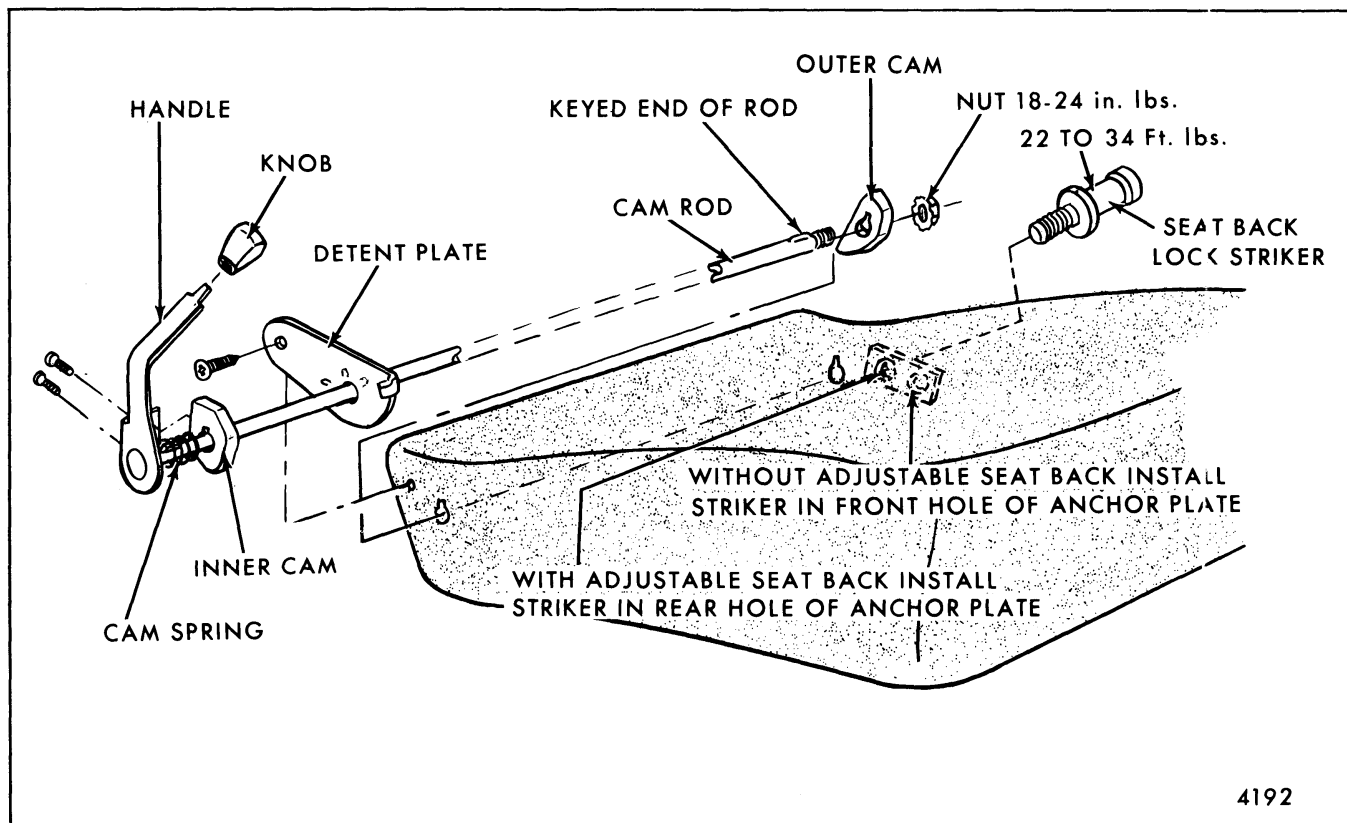
- Remove screw securing inner detent plate and remove detent plate (see Figs. 9-51 and 9-53).
- To install adjustable seat back cam rod, detent plate, cams, spring and handle reverse removal procedure. Check adjustable seat back for proper operation. Tighten cam rod nut 18-24 in. lbs.

## SEAT BACK LOCK STRIKER AND SEAT BACK SIDE INNER BAR STOP - "F and X" Body Styles

### Description

Both the seat back lock striker located on the out-

- At left side of seat, remove nut securing outer cam to cam rod (see Figs. 9-52 and 9-53) and remove cam from rod.
- At outer side of seat remove nut securing outer



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Fig. 9-53-Adjustable Drivers Seat Back Handle, Cams, Cam Rod, Detent Plate and Spring Removal and Installation from Seat Cushion - Chevrolet "F" Styles

board side of the seat cushion and seat back side inner bar stop located on the inboard side of the seat cushion of a single metal bolt and washer assembly threaded into a tapped plate located in the seat cushion frame assembly.

### Removal and Installation

1. Using door and tail gate striker removal tool J-23457 or BT-7107 or equivalent, remove striker or stop from seat back side arm.
2. To install striker or stop, start thread engagement by hand to assure that bolts is threaded straight then tighten striker or stop 22 to 34 ft. lbs. Use tool J-23457 or BT-7107 or equivalent.

**NOTE:** On the DRIVERS seat ONLY two threaded holes are provided in the outboard anchor plate for installation of the seat back lock

striker. The striker must be installed in the FRONT threaded hole on a drivers seat WITHOUT adjustable seat back. On a drivers seat WITH adjustable seat back the striker must be installed in the REAR threaded hole (see Fig. 9-53).

**WARNING:** THE SEAT BACK LOCK STRIKER AND SEAT BACK SIDE INNER BAR STOP ARE IMPORTANT ATTACHING PARTS IN THAT THEY COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS. THEY MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THIS PART.

## REAR SEATS

### REAR SEAT CUSHION ASSEMBLY - All Styles Except "A" Body and Station Wagons

#### Removal

1. Push lower forward edge of seat cushion rearward; then, lift upward and pull forward on seat cushion frame to disengage cushion frame wires from retainers on rear seat pan (Figs. 9-55 and 9-54).

**NOTE:** If difficulty is experienced in disengaging the front edge of the rear seat cushion from retainers on rear seat pan it may be necessary to kneel (on four-door styles) or stoop (on two-door styles) on the rear floor pan. Grasp lower edge of seat cushion at location of retainer on one side of seat; then, lean forward (towards seat cushion) using leg pressure against hands or arms, exert sufficient rearward pressure to disengage seat from retainers.

#### Installation

1. Carefully lift cushion into body using caution not to damage adjacent trim. Position rear edge of cushion under rear seat back assembly.
2. Align wire protrusions on front of seat cushion frame with retainers on floor pan (Fig. 9-55). Push seat cushion assembly rearward until protrusions engage in retainers; then, press down and pull cushion forward to fully engage in retainers.

**NOTE:** If difficulty is experienced in engaging front of cushion in retainers, use the same method described under Step 1 of "Removal", to engage cushion in retainers.

If seat cushion frame protrusions are not properly centered in relation to retainers on seat pan, proper engagement and placement of cushion will be extremely difficult.

### REAR SEAT CUSHION ASSEMBLY - All "A" Body Styles

#### Removal and Installation

1. Under front of rear seat cushion, remove two bolts securing rear cushion wire frame to floor pan (Fig. 9-56).
2. Pull rear seat cushion forward to disengage rear of cushion from under rear seat back.
3. To install, rear seat cushion, reverse removal procedure.

### REAR SEAT BACK ASSEMBLY - All Styles Except Station Wagons and "X" Body "17" Style

#### Removal and Installation

1. Remove rear seat cushion assembly, as previously described.

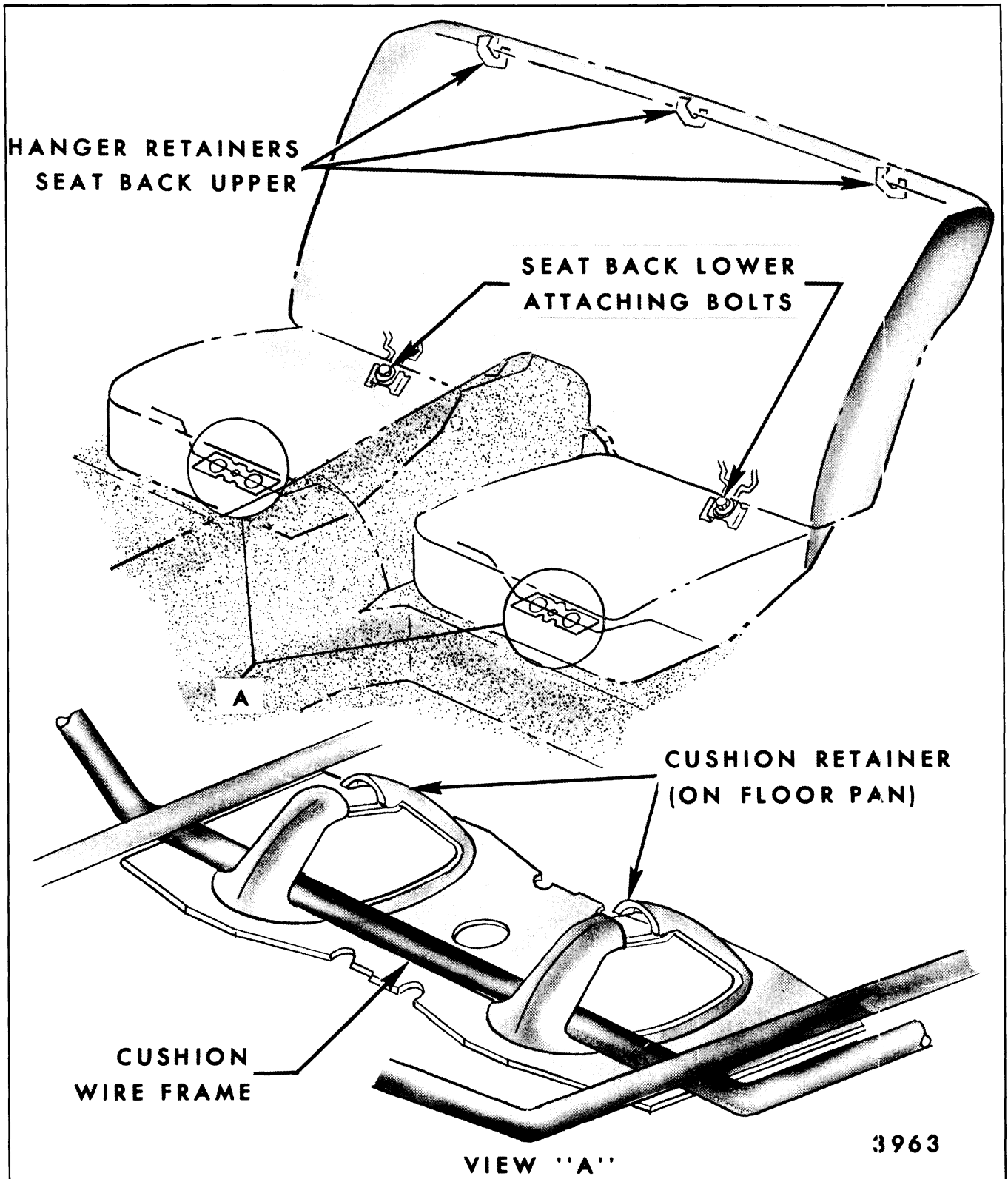


Fig. 9-54-Rear Seat Cushion and Back Installation - "F" Body Styles

2. At bottom of seat back, remove bolts securing rear seat outer lap belt retractors. On convertible styles, remove screw from rear side of seat back

panel support securing upper corners of seat back to panel (see Figs. 9-55 and 9-56).

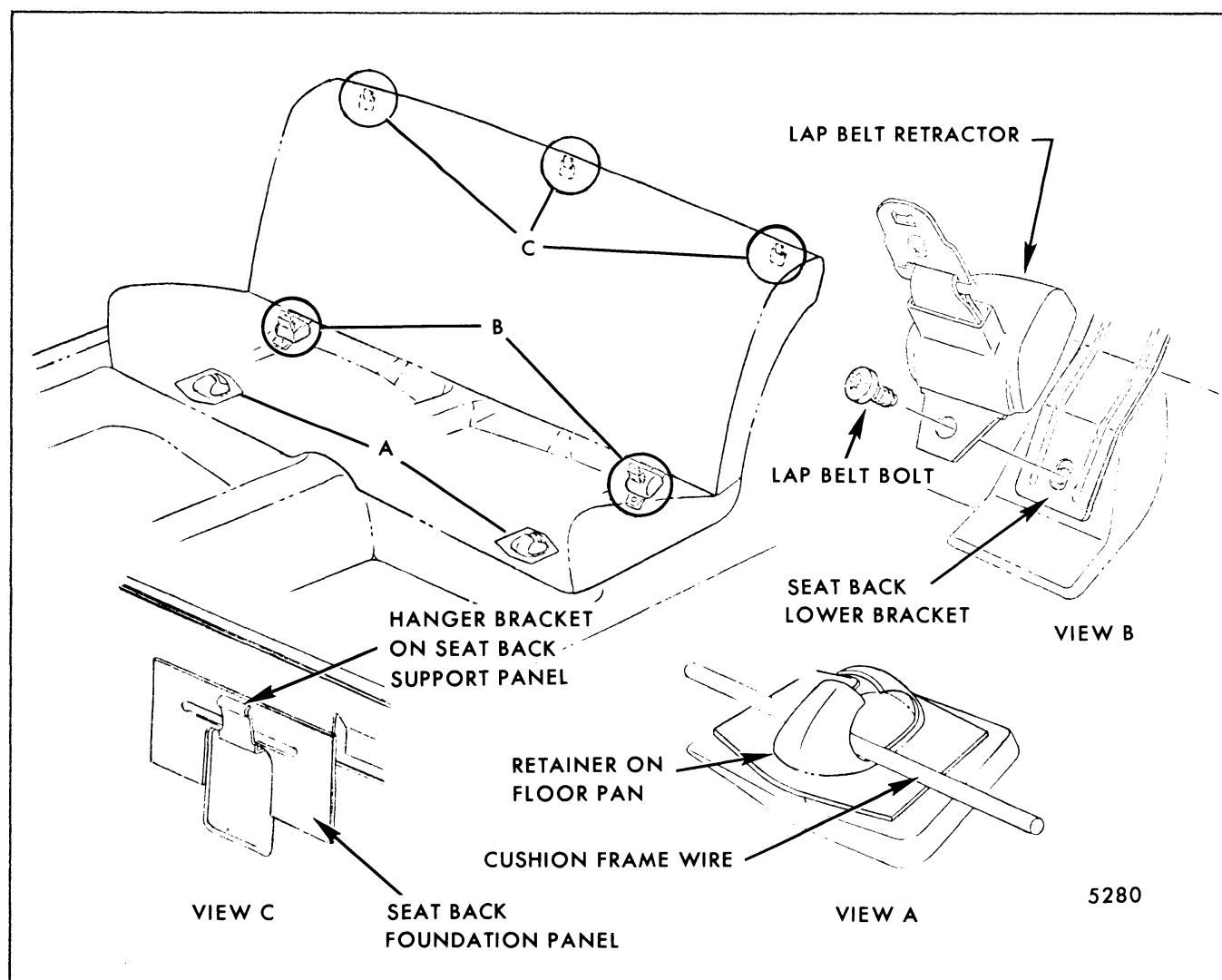


Fig. 9-55-Rear Seat Cushion and Back Installation - "B-C-D-E" Body Styles Except Station Wagon

**NOTE:** If screws are used to secure center of rear side to seat back panel it will be necessary to work from inside rear compartment to remove screws.

3. On all styles except "E" styles, raise seat back upward until disengaged from hangers on the seat back panel support. On "E" styles push seat back downward until wire protrusions at top of seat back are disengaged from slots in seat back panel support.
4. Remove seat back assembly from body.
5. To install, reverse removal procedure, making certain that all attaching body tabs and hangers have industrial body tape applied to them to act as an anti-squeak. Install outer lap belt retractor

over seat back lower brackets and tighten retractor bolts 20 to 45 ft. lbs.

## REAR SEAT BACK CENTER ARM REST AND CURTAIN

### Removal and Installation

1. Lower rear seat back arm rest. On all styles except 6CB69 carefully pull upper portion of arm rest curtain out of slot in hanger plate and fold curtain forward. On 6CB69 styles, fold arm rest flipper forward.
2. Remove four screws securing arm rest to hanger plate linkage then, remove arm rest from seat back.
3. To install, reverse removal procedure.

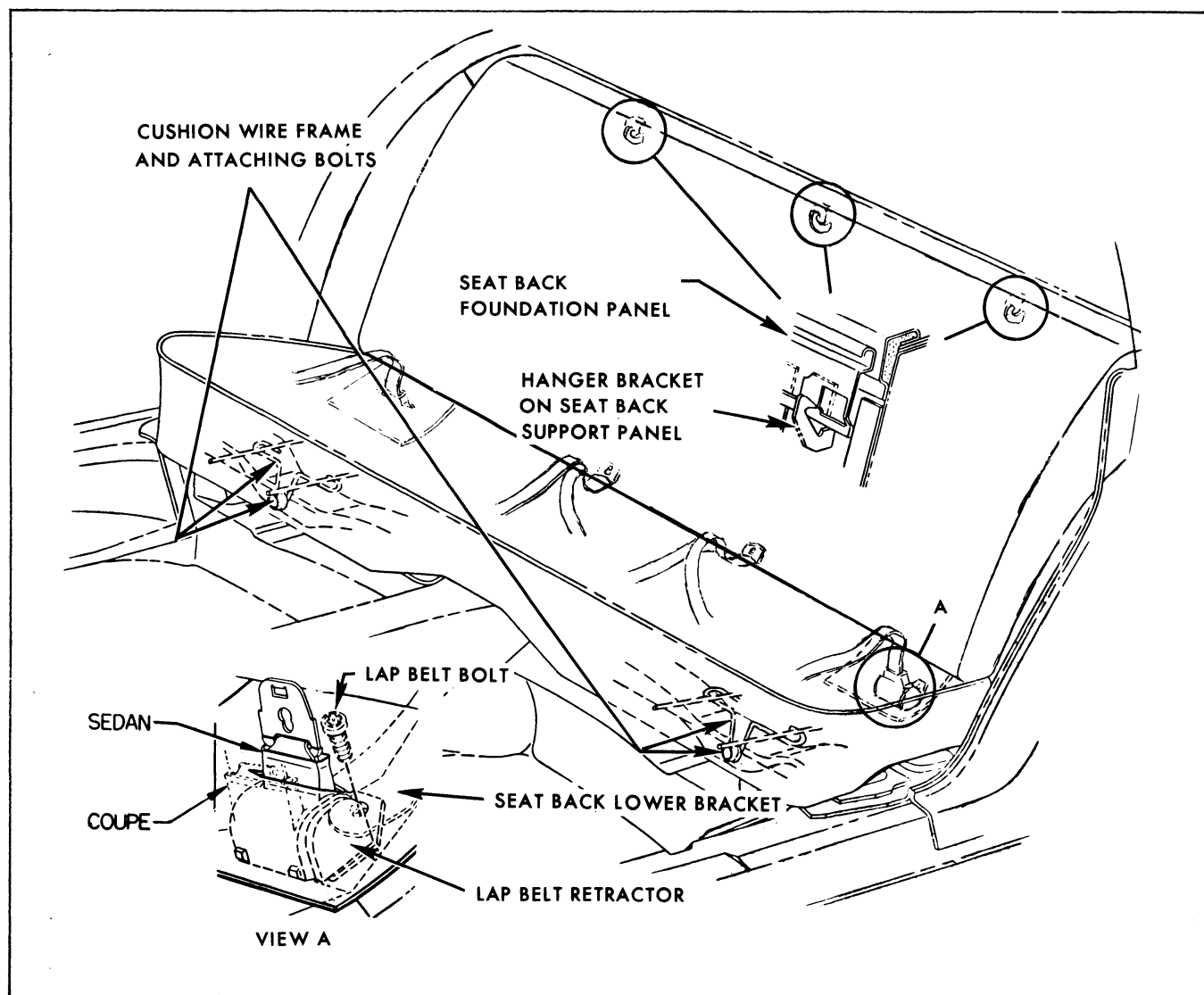


Fig. 9-56-Rear Seat Cushion and Back Installation - All "A" Body Except Station Wagons

## REAR SEAT BACK CENTER ARM REST HANGER PLATE AND LINKAGE

### Removal and Installation

1. Remove rear seat back center arm rest; then, remove two screws securing arm rest hanger plate to body seat back support brace. Remove rear seat back.
2. On back side of rear seat back, remove four screws securing arm rest hanger plate to seat back supports; then, carefully remove arm rest and hanger plate assembly from seat back (Fig. 9-57).
3. To install, reverse removal procedure. Prior to tightening hanger plate screws move arm rest

assembly upward until top is snug against top of opening in seat back.

## AUXILIARY SEAT ASSEMBLY - Cadillac Limousine Styles

### Removal and Installation

1. Place auxiliary seat in the folded forward position.
2. Move rear seat foot rest rearward; then, unsnap carpet flap. Move foot rest forward and carefully pull carpet flap from under foot rest, as shown in Figure 9-58.
3. Remove foot rest hinge attaching screws and remove foot rest assembly (Fig. 9-58).

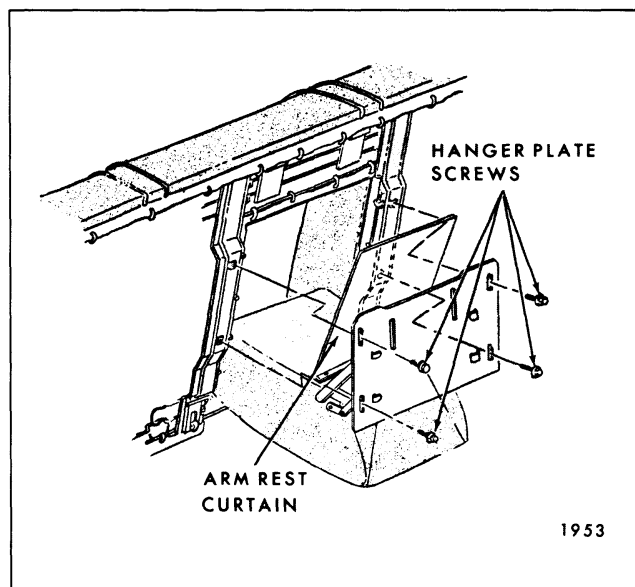


Fig. 9-57-Rear Seat Back Arm Rest and Hanger Plate

4. Remove auxiliary seat hinge pin cap screws; then, remove cap and auxiliary seat assembly (Fig. 9-58).
5. To install auxiliary seat assembly, reverse removal procedure.

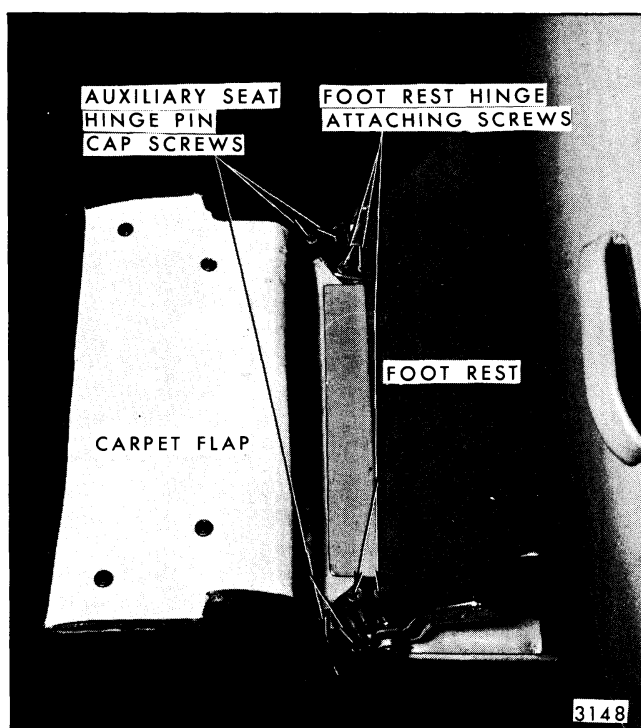


Fig. 9-58-Auxiliary Seat Assembly - Removal and Installation - Cadillac Limousine Styles

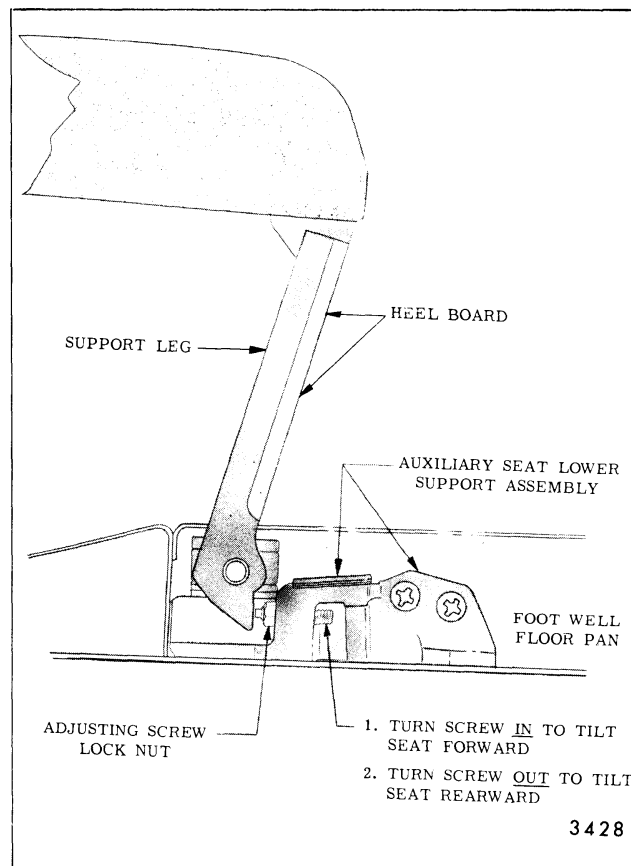


Fig. 9-59-Auxiliary Seat Adjustment - Cadillac Limousine Styles

### AUXILIARY SEAT ADJUSTMENT - Cadillac Limousine Styles

The auxiliary seats in Cadillac Limousine Styles can be adjusted to provide additional leg room for auxiliary seat passengers.

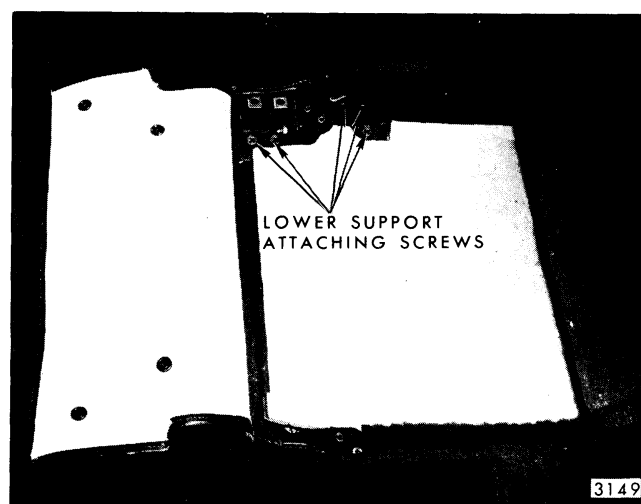


Fig. 9-60-Auxiliary Seat Lower Support - Cadillac Limousine Styles

The following procedure describes and illustrates how to adjust the auxiliary seat.

1. Place auxiliary seat in the upright, sitting position.
2. On the front side of the auxiliary seat heel board, turn back foot well carpet flap to expose the auxiliary seat lower outboard and inboard support assemblies (Fig. 9-59).
3. Loosen the hex head adjusting screw lock nut at

both inboard and outboard support (see Fig. 9-59).

4. Carefully turn the adjusting screw (see Fig. 9-59) at both supports the SAME AMOUNT to allow the seat to pivot rearward further; thereby, providing additional leg room for the auxiliary seat passenger. Tighten the adjusting screw lock nut at both supports.

When making this adjustment maintain a minimum distance of at least 6-1/4 inches from rear seat cushion to auxiliary seat.

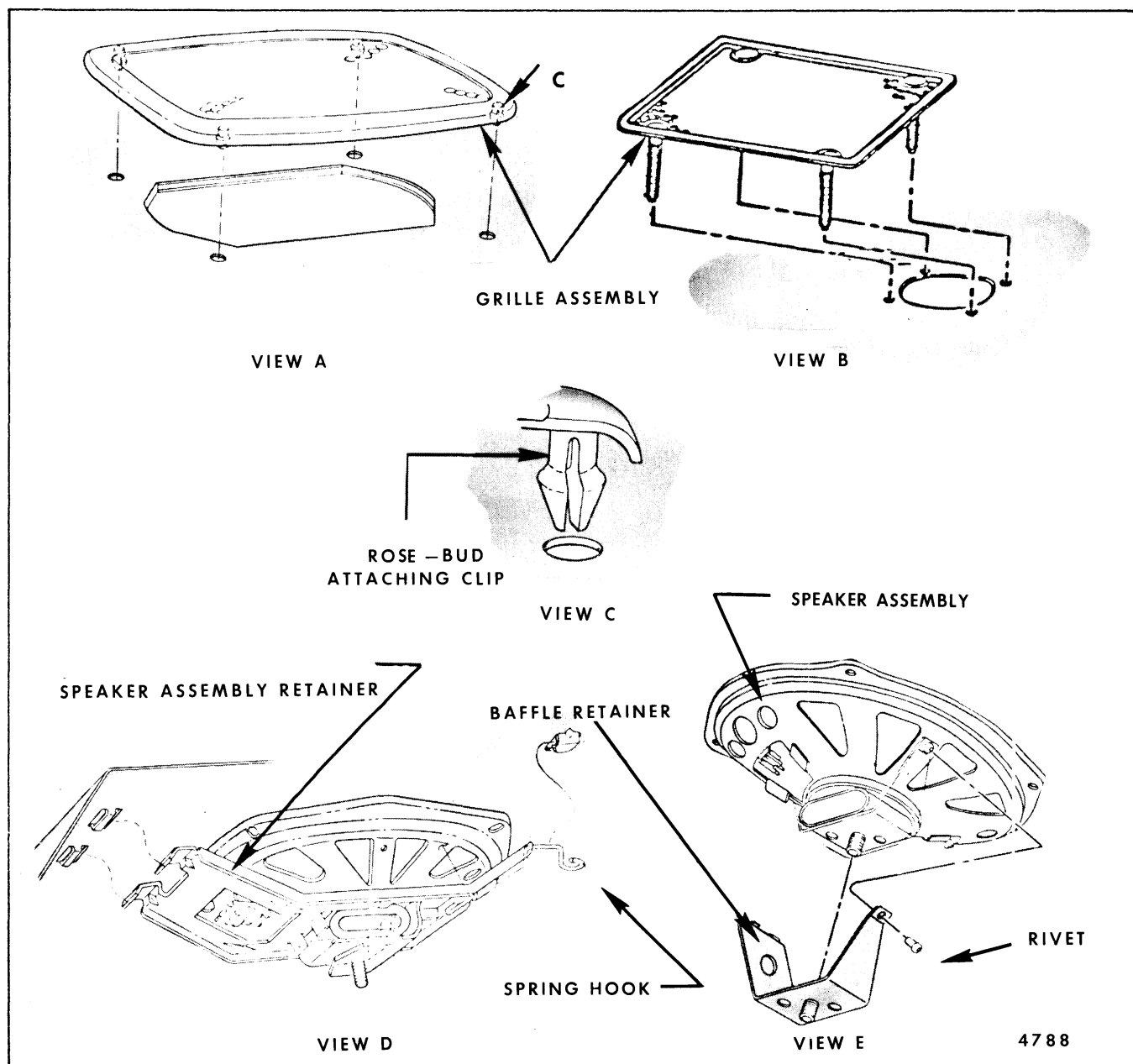


Fig. 9-61-Grille and Speaker Attachment



## AUXILIARY SEAT LOWER SUPPORT ASSEMBLY - Cadillac Limousine Styles

### Removal and Installation

1. Remove auxiliary seat assembly, as previously described.
2. Remove lower support assembly attaching screws, shown in Figure 9-60, and remove support assembly.
3. To install auxiliary seat lower support assembly, reverse removal procedure.

## REAR SPEAKERS - ALL STYLES (Except "35,45,67" and "X-17")

### Description

One basic type of speaker assembly is installed to the rear seat to back window panel. Access for removal is gained through the rear compartment.

If a non-perforated painted panel is used the speaker is attached to a speaker grille assembly or retained by a one piece metal retainer (see Fig. 9-61, Views "B" and "D").

If a perforated vinyl coated panel is used the speaker is retained with either a metal retainer Figure 9-61, View "D" or a bolt and clip assembly Figure 9-62, View "C".

### Removal and Installation

1. If speaker baffle (cover) is installed to speaker assembly, detach baffle by removing push on retainer or attaching nuts (see Fig. 9-62, View "A" and "B").
2. Disconnect speaker wire from body harness.

**NOTE:** If replacing speaker remove baffle retainer as shown in Figure 9-61, View "D" and "E".

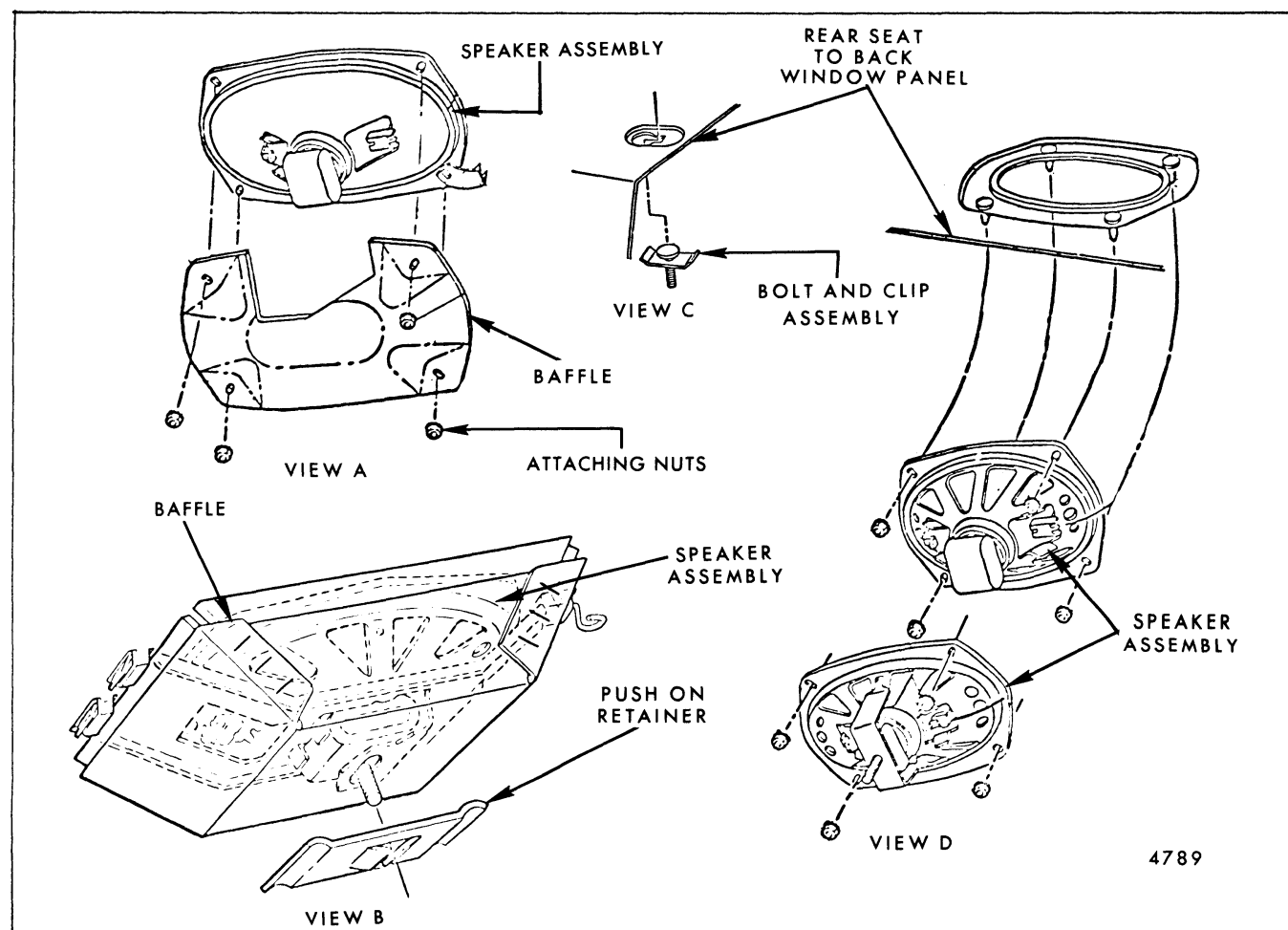


Fig. 9-62-Baffle and Speaker Attachment

3. If not previously removed with baffle, remove four (4) attaching nuts to separate speaker assembly from grille and lift grille assembly upward to complete removal (see Fig. 9-62).
4. On styles using metal retainer assembly to secure speaker to rear seat to back window panel Figure 9-61, View "D". Disengage spring hook from tab at rear of panel and swing speaker assembly downward to remove.
5. To install, reverse removal procedure.

## REAR SPEAKER - "67" Styles

### Description

The rear speaker on "67" styles is installed to the rear of the rear seat back brace (see Fig. 9-63).

### Removal and Installation

1. Remove rear seat cushion and seat back.

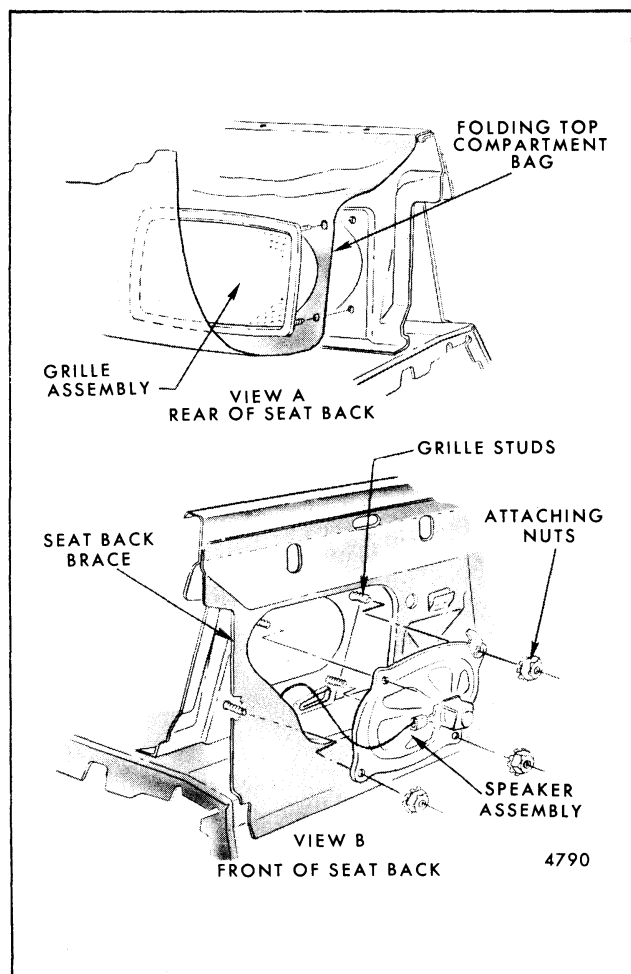


Fig. 9-63-Rear Seat Speaker Installation - "67" Styles

2. Disconnect speaker wire from body harness at rear of speaker assembly.
3. Remove four (4) attaching nuts to detach speaker assembly from grille studs.
4. To remove grille assembly pull outward to separate from seat back brace and folding top compartment bag material.
5. To install, reverse removal procedure.

## REAR SEAT TO BACK WINDOW PANEL TRIM ASSEMBLY - All Styles

### Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Detach shoulder straps if so equipped. Also, where present, detach optional equipment grilles.
3. Remove rear quarter lower and upper trim assemblies.
4. On "A-57" styles remove two trim panel to seat back brace attaching screws and disengage tabs at rear of trim panel from slots.

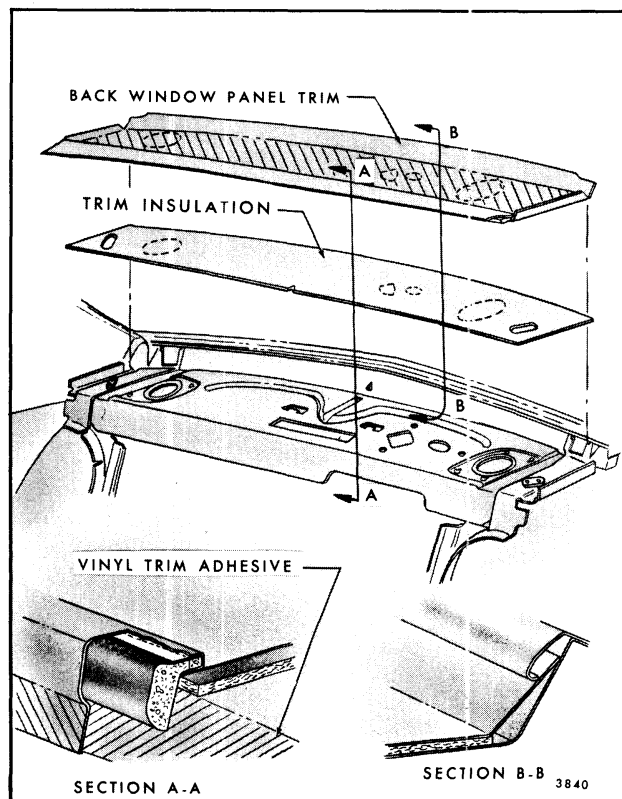


Fig. 9-64-Back Window Panel Trim Attachment All Styles

5. Carefully break cement bond securing trim assembly at seat back panel (Fig. 9-64).
6. Remove trim assembly lifting up front edge and by pulling assembly forward.
7. To install, position trim assembly to back window panel by inserting rear edge of assembly under garnish molding or feature strip. Center and align front edge of trim assembly with front edge of seat back panel as shown in Figure 9-64. With non-staining vinyl trim adhesive, cement valance of trim assembly to seat back panel as shown. Install attaching screws if present, then reverse balance of removal procedure.

## FOLDING REAR SEAT AND LOAD FLOOR PANELS - "X-17" Style

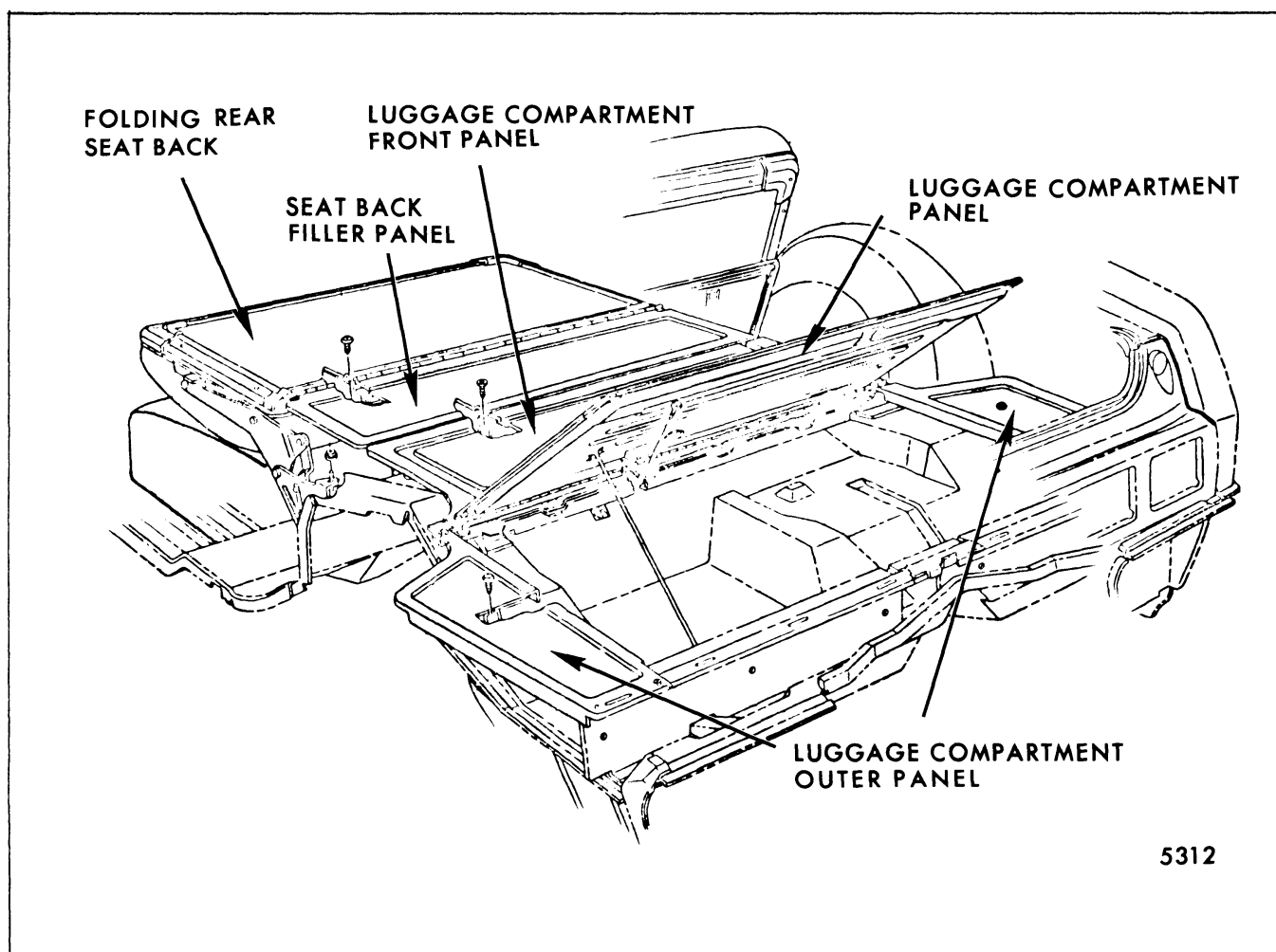
All "X-17" styles are equipped with a folding rear seat back which can be lowered to extend the load

floor area. The rear seat back has a positive acting seat back lock located on the right side. The lock must be disengaged to lower the seat back. When the rear seat back is raised to the up position the lock hook engages the striker and locks the seat back securely in place. The luggage compartment cover has a hold-open support rod secured by a clip on the luggage compartment rear cross bar. The load floor consists of the rear seat back panel, rear seat back filler panel, luggage compartment front panel, luggage compartment panel and a right and left side luggage compartment outer panel (Fig. 9-65).

## REAR SEAT CUSHION - "X-17" Style

### Removal and Installation

1. To remove rear seat cushion push front of seat rearward; then, lift upward and pull toward front of body until cushion frame wires disengage from retainers on floor pan (Fig. 9-66). Disengage seat belts from seat belt retainers



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Fig. 9-65-Folding Rear Seat and Load Floor Panels - "X-17" Style

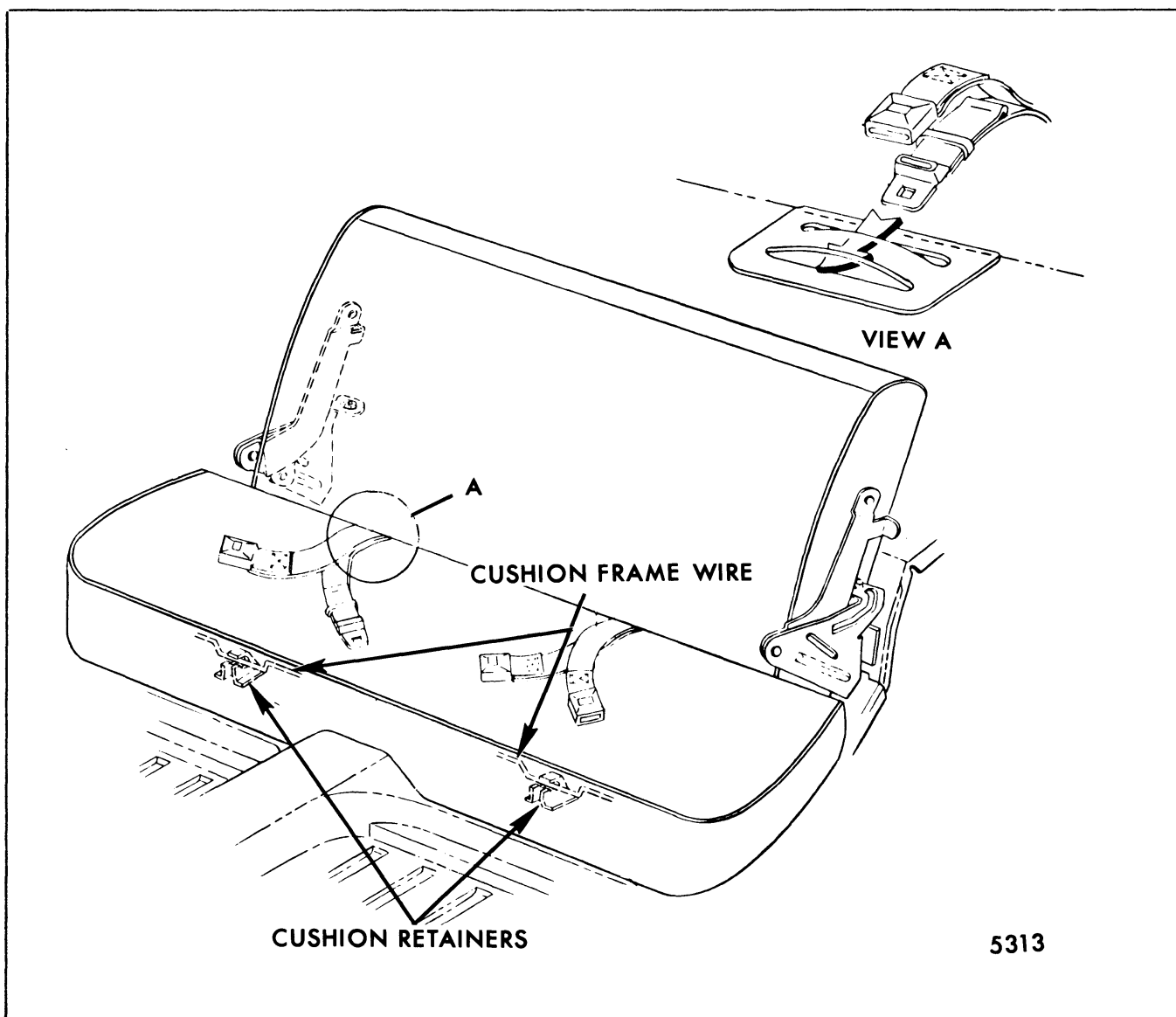


Fig. 9-66-Rear Seat Cushion

- (Fig. 9-66, View "A") and lift cushion from body.
2. To install, reverse removal procedure making sure seat frame wire is securely engaged in both right and left floor pan retainers.
2. Remove attaching screws and lift panel and hinge assembly from body.
3. To install, reverse removal procedure.

### LUGGAGE COMPARTMENT PANEL AND HINGE ASSEMBLY - "X-17" Style

#### Removal and Installation

1. Lift luggage compartment panel sufficiently to gain access to attaching screws at front of panel (Fig. 9-65).

### REAR SEAT BACK FILLER PANEL AND HINGE ASSEMBLY - "X-17" Style

#### Removal and Installation

1. With rear seat back in load floor position remove attaching screws at front end of filler panel and remove from body (Fig. 9-67).
2. To install, reverse removal procedure.

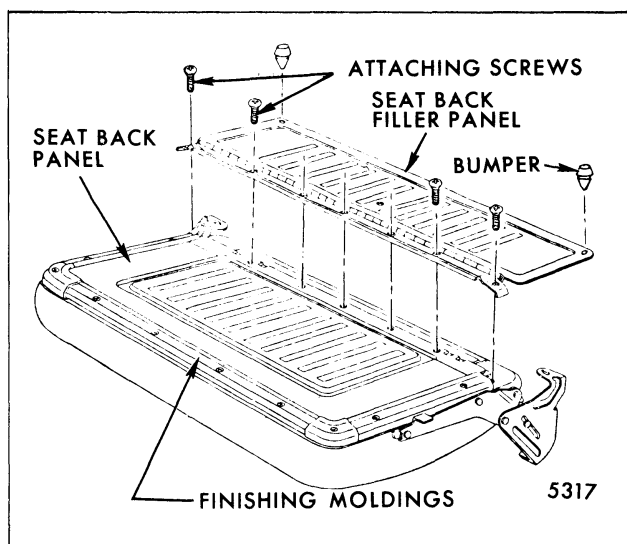


Fig. 9-67-Folding Rear Seat Back Filler Panel

## REAR SEAT BACK ASSEMBLY, BACK PANEL, TRIM COVER AND FOAM PAD - "X-17" Style

### Adjustment

To align the seat back for proper centering of the seat

back and filler panel and engagement of the seat back lock with lock striker, the hinge-to-floor pan attaching hole in both right and left hinge is slotted laterally. To adjust seat back assembly laterally, loosen both right and left hinge-to-floor pan attaching nuts (Fig. 9-68), adjust hinges as required; then, tighten attaching nuts - torque nuts 12 to 18 ft. lbs.

### Removal and Installation

1. With rear seat back in load floor position remove two (2) linkage to floor pan bracket attaching nuts (Fig. 9-68) and lift seat back assembly to disengage lower portion of hinge from tab on floor pan (Fig. 9-68).
2. If replacing seat back panel, trim cover or foam pad remove seat back finishing moldings and carpet where present.
3. Remove linkage and lock assembly to seat back attaching screws (Fig. 9-70).
4. Remove hog rings securing trim cover to seat back panel and remove trim cover. To remove foam pad of if replacing back panel carefully break cement bond securing pad to panel and remove pad.

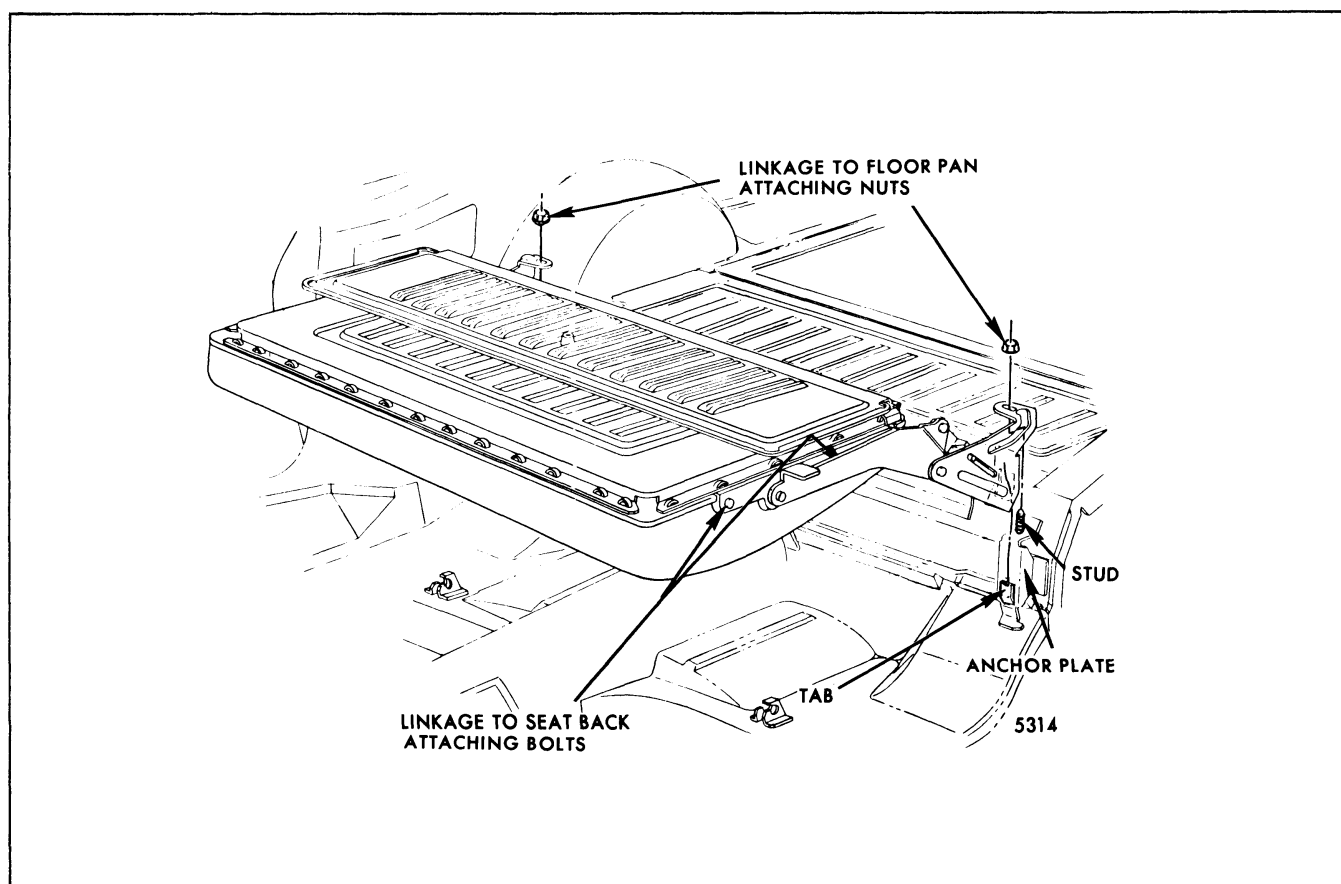


Fig. 9-68-Folding Rear Seat Back Hinge and Linkage

5. To install, reverse removal procedure. Torque linkage to seat back frame attaching bolts to 8-12 ft. lbs. If replacing foam pad, cement pad in position with foam rubber cement.

## LUGGAGE COMPARTMENT FRONT FILLER PANEL - "X-17" Style

### Removal and Installation

1. With rear seat in load floor position turn filler panel back onto seat back panel.
2. Remove luggage compartment panel and hinge assembly as previously described.
3. Remove luggage compartment front panel, front attaching screws and seat back filler panel stops (Fig. 9-69).
4. Remove luggage compartment right and left outer panel front attaching screw (see Fig. 9-65); then, remove luggage compartment front panel.
5. To install, reverse removal procedure.

## REAR SEAT BACK LINKAGE ASSEMBLY - "X-17" Style

### Removal and Installation

1. Raise rear seat back filler panel and remove rear seat back linkage-to-anchor plate stud attaching nuts (Fig. 9-68).
2. Remove seat back linkage to seat back frame and lock assembly attaching bolts (Fig. 9-70) and remove linkage.
3. To install seat back linkage, reverse removal procedure. Install torque attaching bolts to 8-12 ft. lbs. Check operation of folding rear seat back.

## REAR SEAT BACK LOCK ASSEMBLY - "X-17" Styles

### Removal and Installation

1. Lower rear seat back to load floor position.
2. Remove lock assembly (includes attaching bolt, lock spring, latch, handle and bushing) (Fig. 9-70).
3. To install lock assembly, reverse removal procedure. Tighten lock attaching bolt to 8-12 ft. lbs. and check for proper operation of lock.

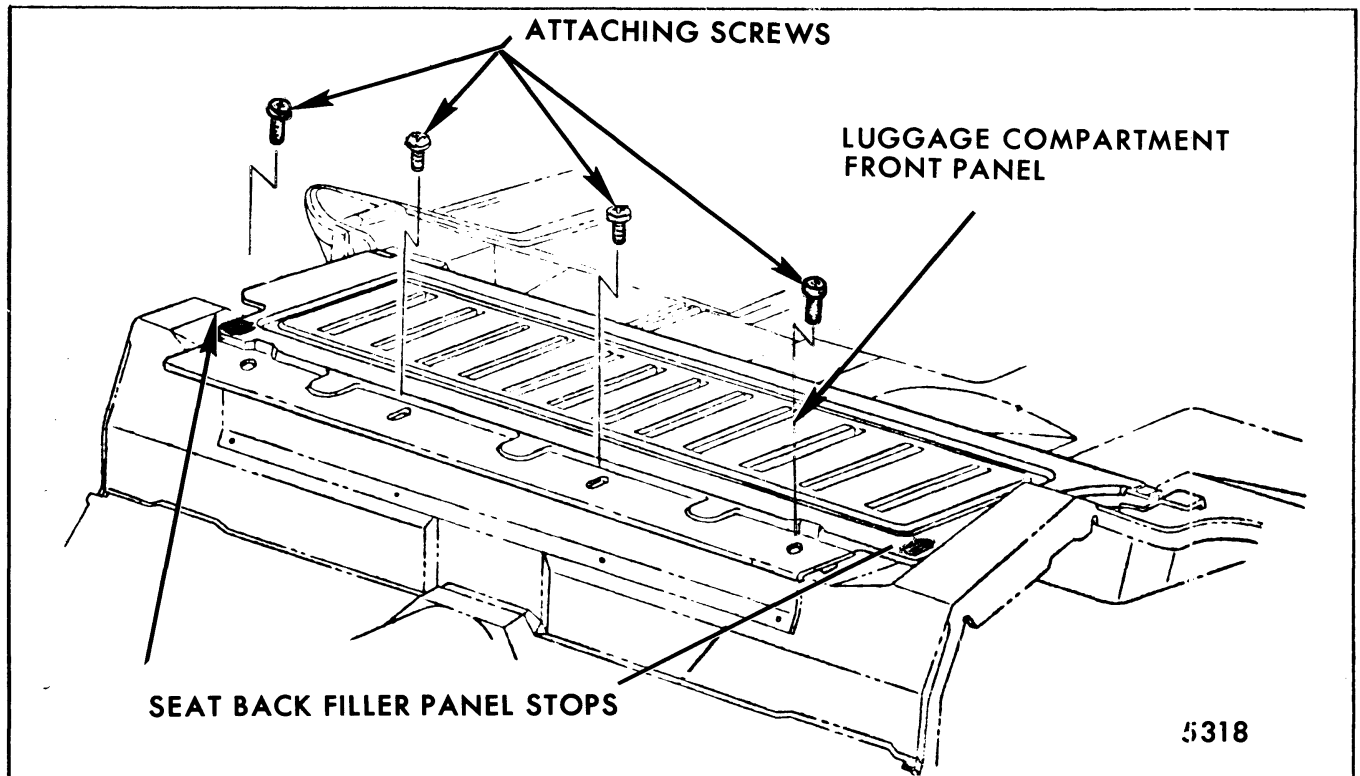


Fig. 9-69-Luggage Compartment Front Panel

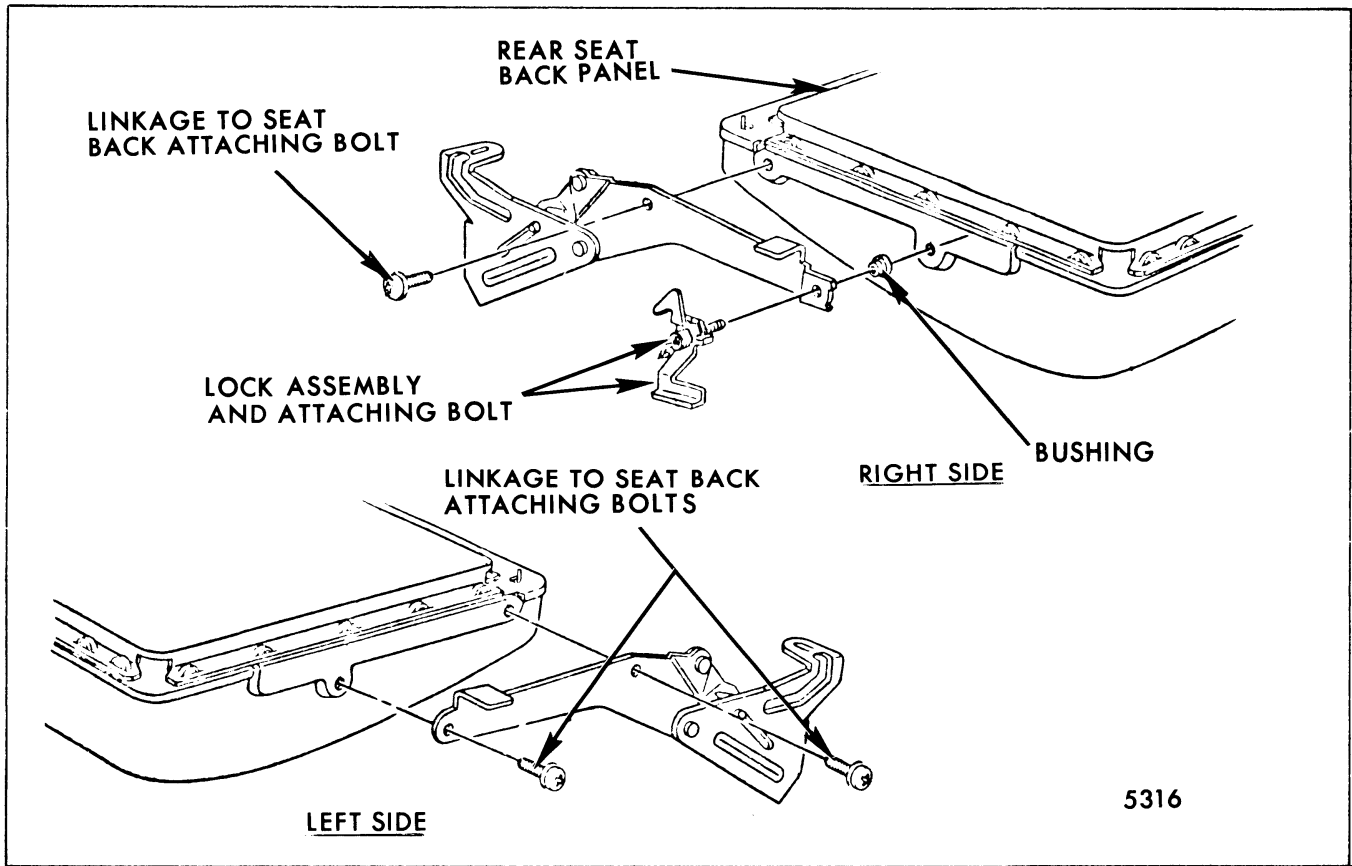


Fig. 9-70-Folding Rear Seat Back Hinge and Linkage

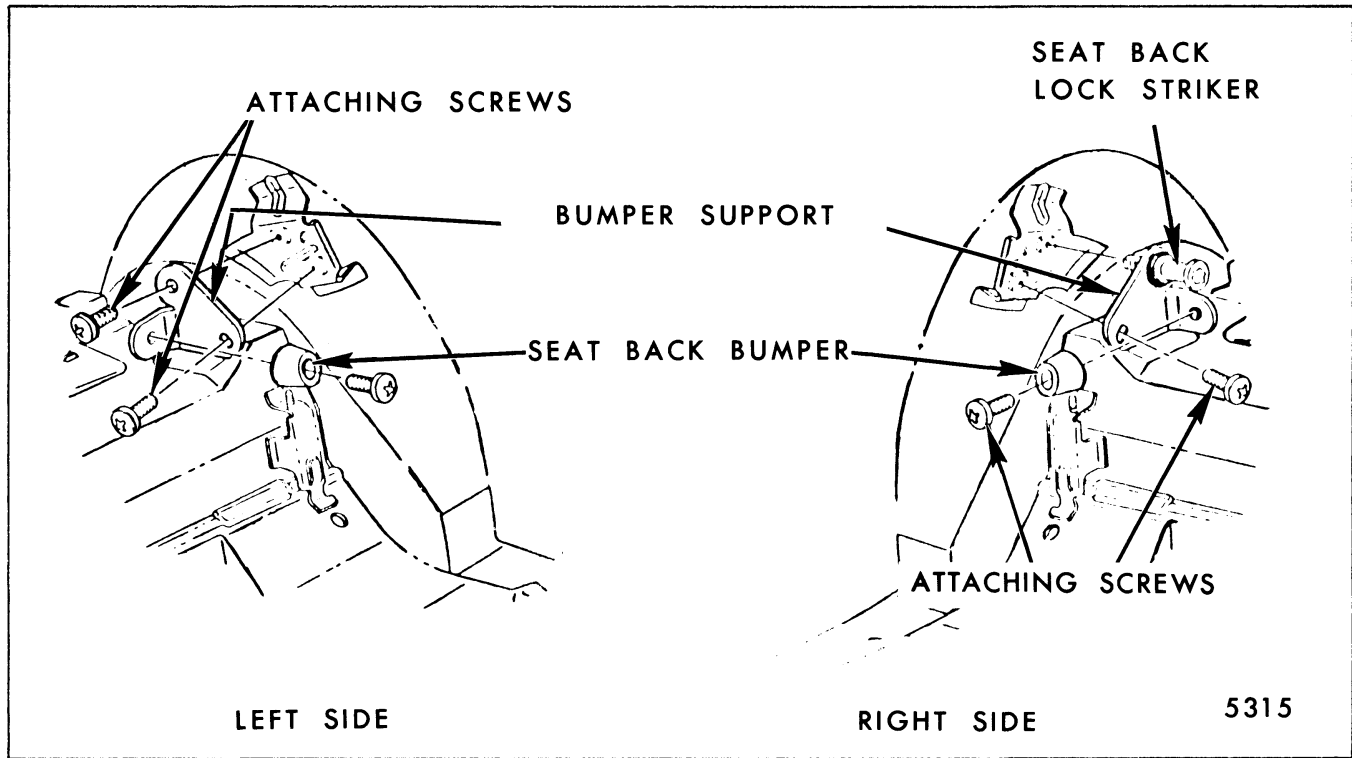


Fig. 9-71-Folding Rear Seat Back Lock Striker, Bumpers and Bumper Supports

## REAR SEAT BACK LOCK STRIKER, BUMPERS AND SUPPORTS - "X-17" Styles

### Removal and Installation

1. Using lock striker removal tool J-23457 or BT-7107 or equivalent remove striker (Fig. 9-71).
2. To remove seat back bumpers or bumper supports remove bumper screws or support screws, shown in Figure 9-71.
3. To install, reverse removal procedure. Torque lock striker 22 to 34 ft. lbs.

## STATION WAGON FOLDING REAR SEATS AND FLOOR PANELS - All Station Wagon Styles

### DESCRIPTION

All station wagon second seat backs incorporate seat back locks located on the upper right side of the seat

backs. On split second seats, a seat back lock is located at the upper outer side of each seat back.

On three-seat station wagons, the third seat back incorporates a lock located at the right lower side of the third seat back.

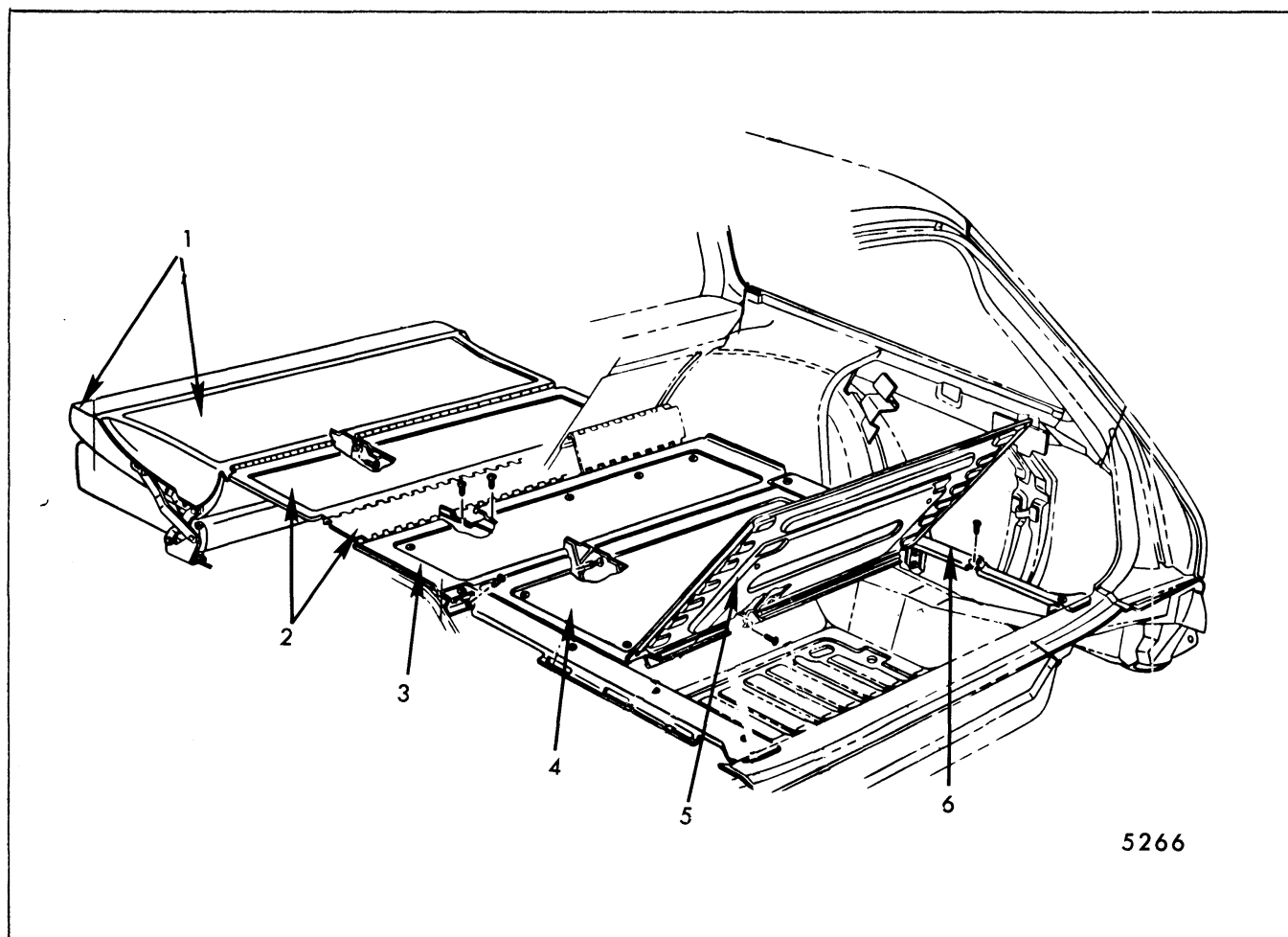


Fig. 9-72-Folding Seats and Load Floor Panels - "A" Body Three-Seat Styles

- |  |  |                                      |                                   |
|--|--|--------------------------------------|-----------------------------------|
| 1. Folding Second Seat Back and Back Panel | 3. Rear Compartment Floor Panel (At Kick-Up) | 4. Folding Third Seat Back and Panel | 5. Luggage Compartment Rear Panel |
| 2. Second Seat Back Filler Panels          |  |                                      | 6. Side Filler Panels             |



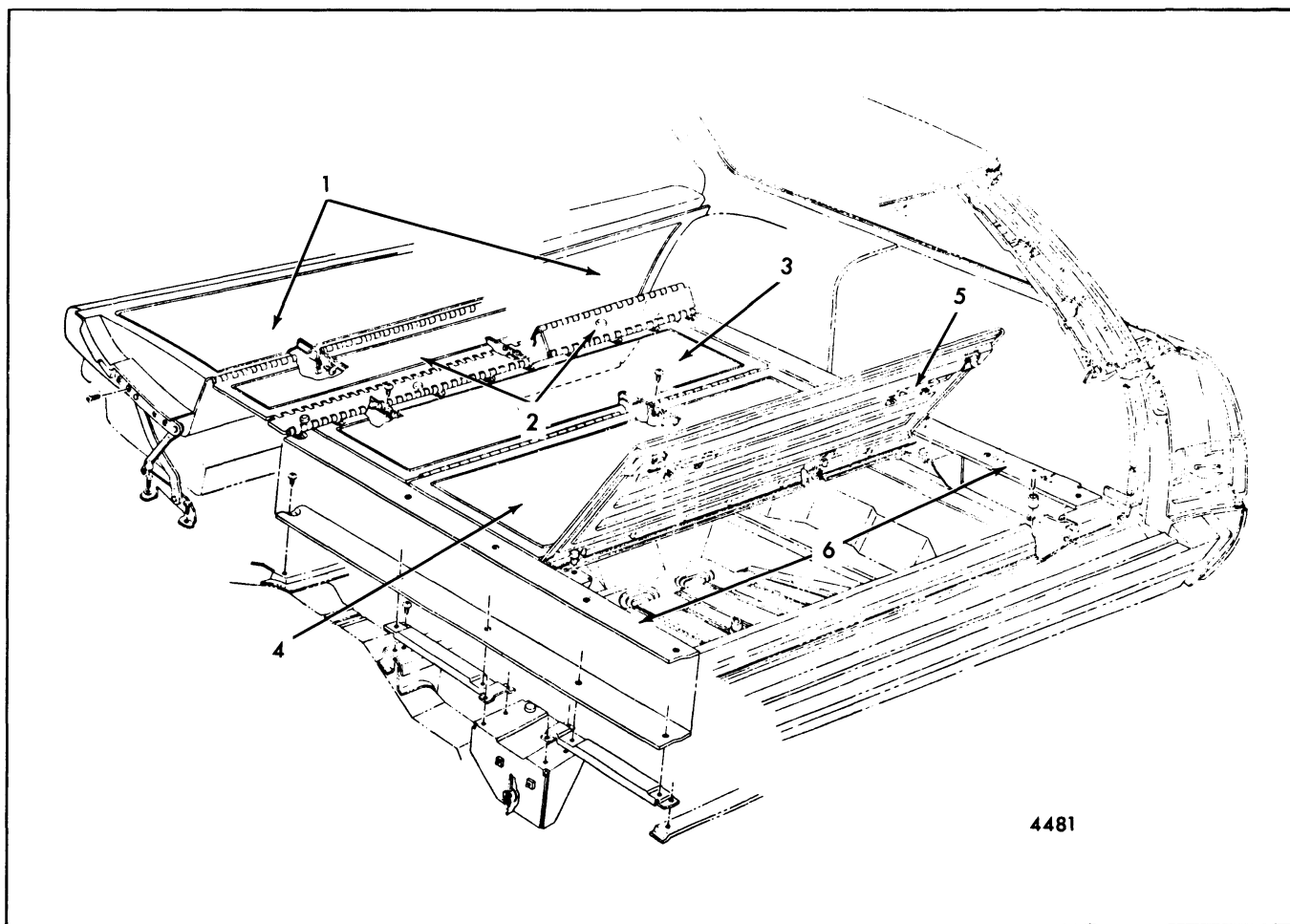


Fig. 9-73-Folding Seats and Load Floor Panels - "A and B" Body Two-Seat Styles

- |  |  |                                    |                                   |
|--|--|------------------------------------|-----------------------------------|
| 1. Folding Second Seat Back              | 3. Rear Compartment Floor Panel (At Kick-Up) | 4. Luggage Compartment Front Panel | 5. Luggage Compartment Rear Panel |
| 2. Folding Second Seat Back Filler Panel |  |                                    | 6. Rear Floor Side Filler Panels  |

**WARNING:** STATION WAGON SECOND AND THIRD SEAT ATTACHING PARTS SUCH AS SEAT LINKAGE-TO-FLOOR PAN AND SEAT LINKAGE-TO-SEAT CUSHION OR BACK BOLTS ON NUTS, SEAT BACK LOCK BOLTS ETC. ARE IMPORTANT ATTACHING PARTS IN THAT THEY COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS. THEY MUST BE REPLACED WITH AN IDENTICAL PART OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THESE PARTS.

The following views are typical of the station wagon folding seats and rear compartment floor panels.

These illustrations identify the component panels of the rear compartment area and their relationship to adjacent panels.

1. Figure 9-72 is typical of All "A" Body Three-Seat Styles.
2. Figure 9-73 is typical of All Two-Seat Station Wagon Styles.
3. Figure 9-74 is typical of All "B" Body Three-Seat Station Wagon Styles.

### REAR FLOOR SIDE FILLER PANEL (Right or Left Side) - "A and B" Body Two-Seat and Three-Seat Styles

#### Removal and Installation

1. Remove attaching screws from top of panel. If

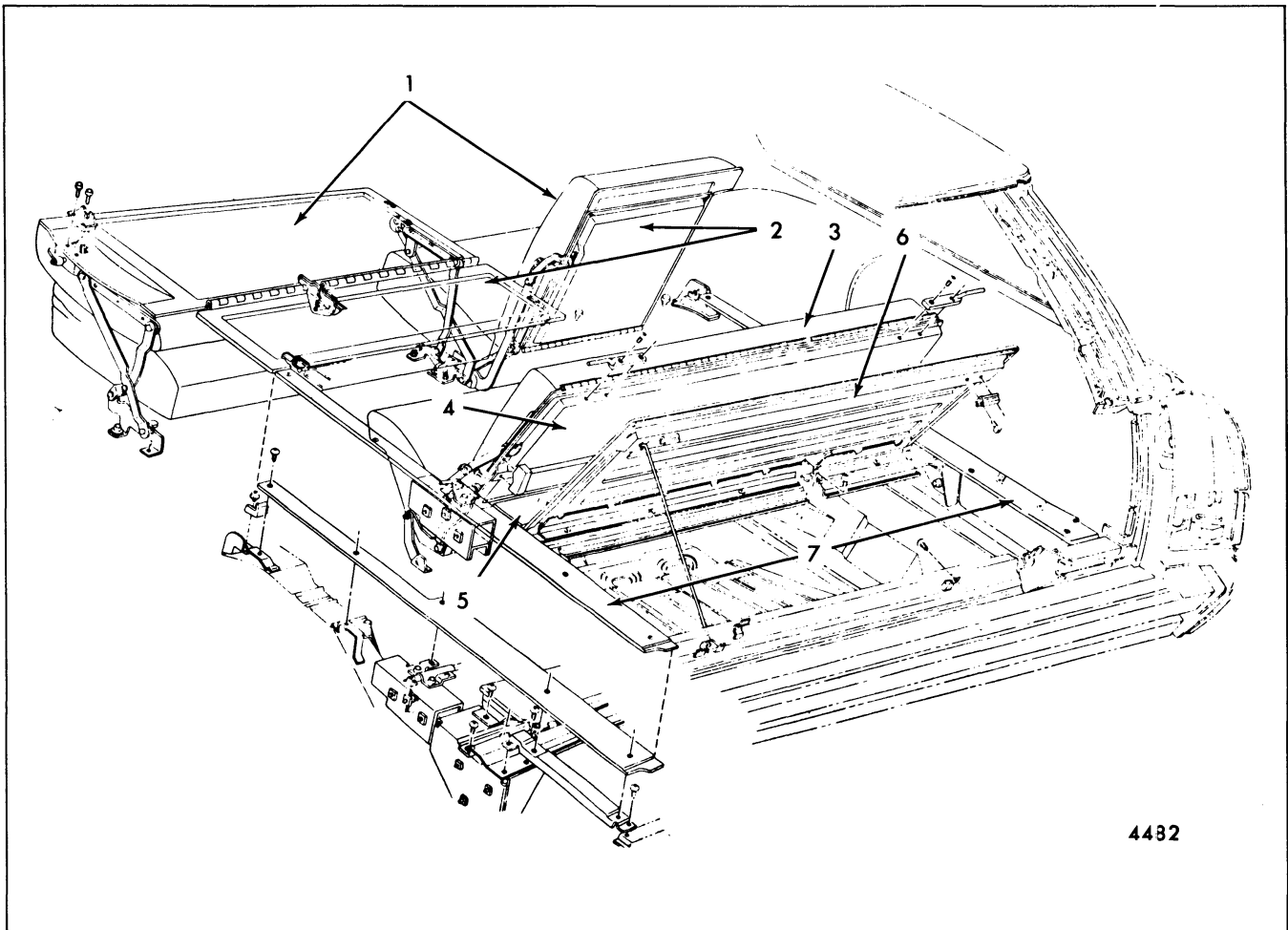


Fig. 9-74-Folding Seats and Load Floor Panels - "B" Body Three-Seat Styles

- |   |                                 |                                     |                              |
|---|---------------------------------|-------------------------------------|------------------------------|
| 1. Folding Second Seat Backs (1/3 and 2/3 Seats)      | 3. Folding Third Seat Back      | 5. Luggage Compartment Filler Panel | 6. Luggage Compartment Panel |
| 2. Second Seat Back Filler Panels (1/3 and 2/3 Seats) | 4. Third Seat Back Filler Panel | 7. Rear Floor Side Filler Panels    |                              |

removing right side filler panel, remove spare tire cover panel and remove screws securing filler panel, then remove panel.

On "A" body three-seat styles remove side filler panel supports (Fig. 9-75).

- To install filler panel, reverse removal procedure. If installing a new filler panel, apply cloth body tape over screw attaching holes prior to installation.

gain access to panel piano hinge attaching screws; then, support panel in this position and remove panel to hinge attaching screws.

- On "A" three-seat styles remove three (3) seat back panel to seat back cushion attaching screws.
- To install, reverse removal procedure.

## LUGGAGE COMPARTMENT PANEL(S) AND PANEL HINGE ASSEMBLY - Two and Three-Seat Styles

### Removal and Installation

- Raise luggage compartment panel sufficiently to

## FOLDING THIRD SEAT CUSHION - "A" Body Three-Seat Styles

### Removal and Installation

- Lift third seat back to full raised position.
- Remove two seat cushion to seat support attach-

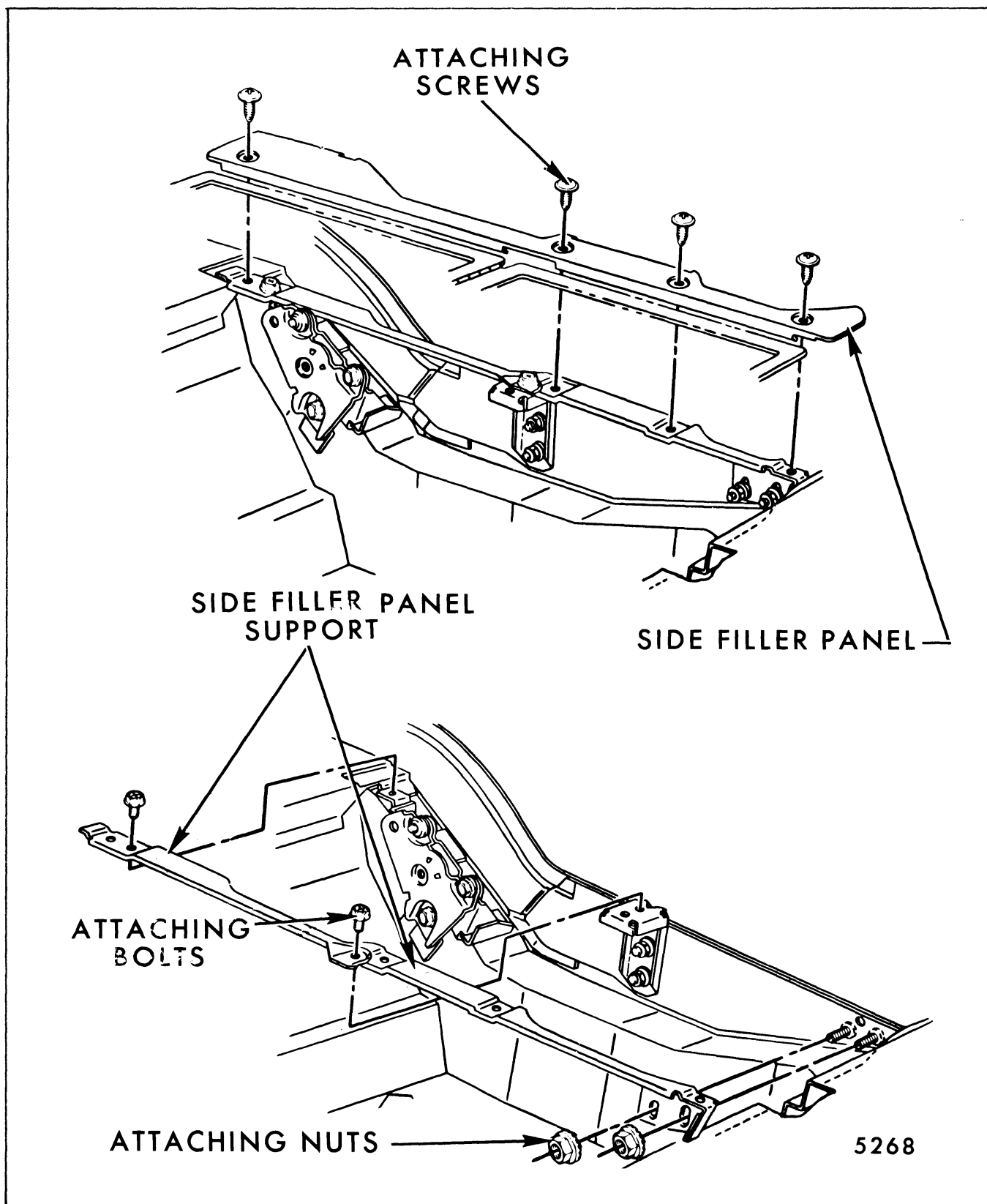


Fig. 9-75-Rear Floor Side Filler Panel - "A" Three-Seat Styles

ing bolts then, disengage seat belts from belt holders and remove cushion (Fig. 9-76).

3. To install, reverse removal procedure.

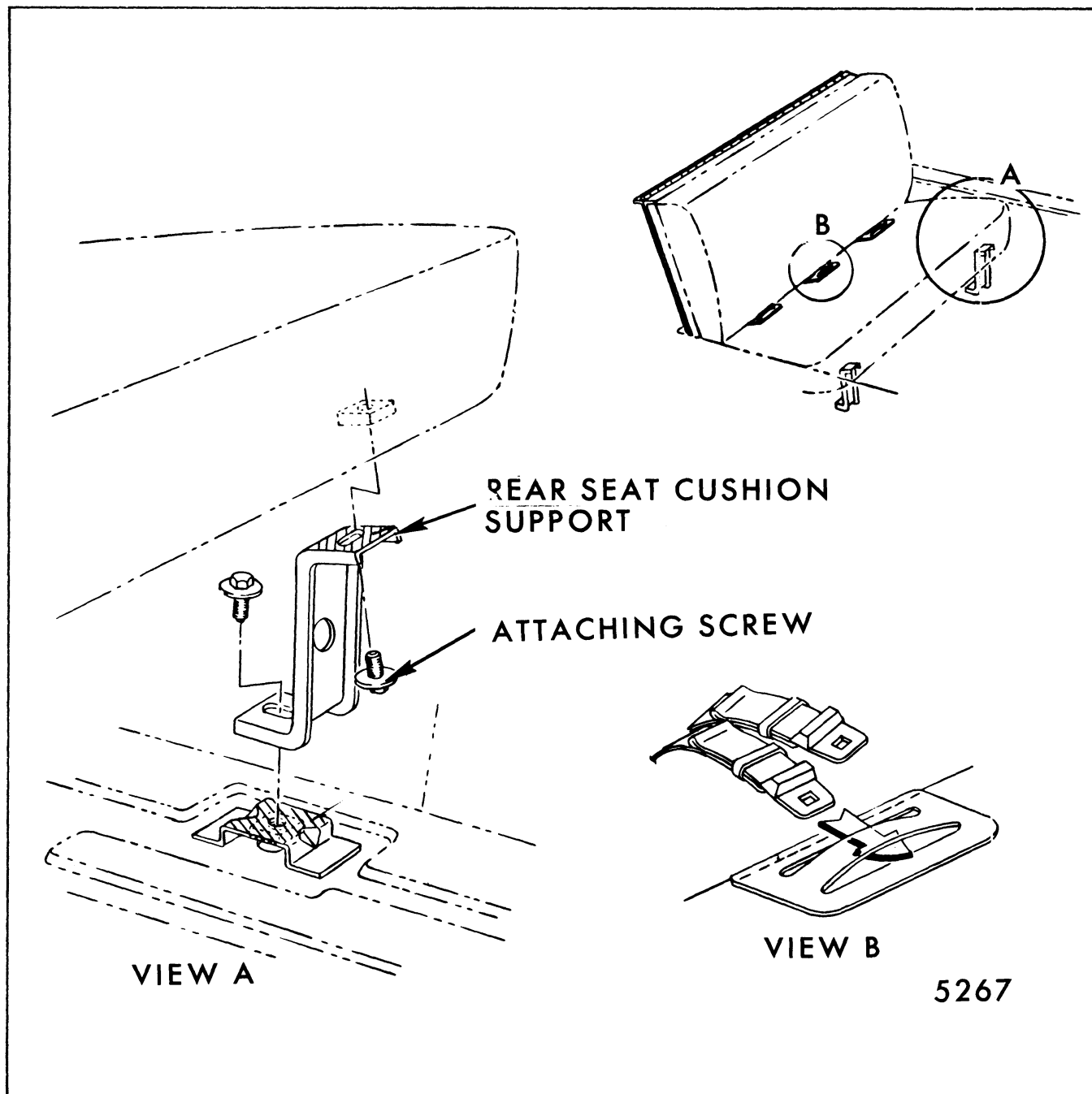


Fig. 9-76-Folding Third Seat Cushion - "A" Body Three-Seat Styles

### FOLDING THIRD SEAT BACK TRIM ASSEMBLY - "A" Body Three-Seat Styles

#### Removal and Installation

1. Raise third seat back assembly to vertical position.
2. Remove three screws securing top edge of seat back trim to seat back panel.
3. Pull top edge of seat back trim slightly rearward;

then, lift trim assembly upward to disengage tabs from three seat back trim foundation retainers on lower portion of panel. Remove trim assembly from body and place on a clean, protected surface.

4. To install, reverse removal procedure. Make sure seat back trim foundation tabs are engaged with all three retainers at lower portion of panel prior to installing seat back trim attaching screws.

## FOLDING THIRD SEAT BACK PANEL ASSEMBLY - "A" Body Three-Seat Styles

### Removal and Installation

1. Lift third seat back to full raised position and remove seat back cushion as previously described.
2. Remove right and left side filler panels and detach side filler panel supports (Fig. 9-75).
3. Remove pivot support and lock covers.
4. Remove three (3) pivot and lock support attaching bolts (right and left side) then lift seat back panel, pivot and lock support assembly from body (Fig. 9-77).

5. To detach support and lock assembly from seat back panel remove two (2) attaching bolts securing support to panel (Fig. 9-77).

6. To install, reverse removal procedure.

## FOLDING THIRD SEAT BACK LOCK AND PIVOT SUPPORT (Right Side) (Pivot Support Left Side)

### Removal and Installation

1. Raise third seat back to full up position.
2. Remove side filler panel and side filler panel support.

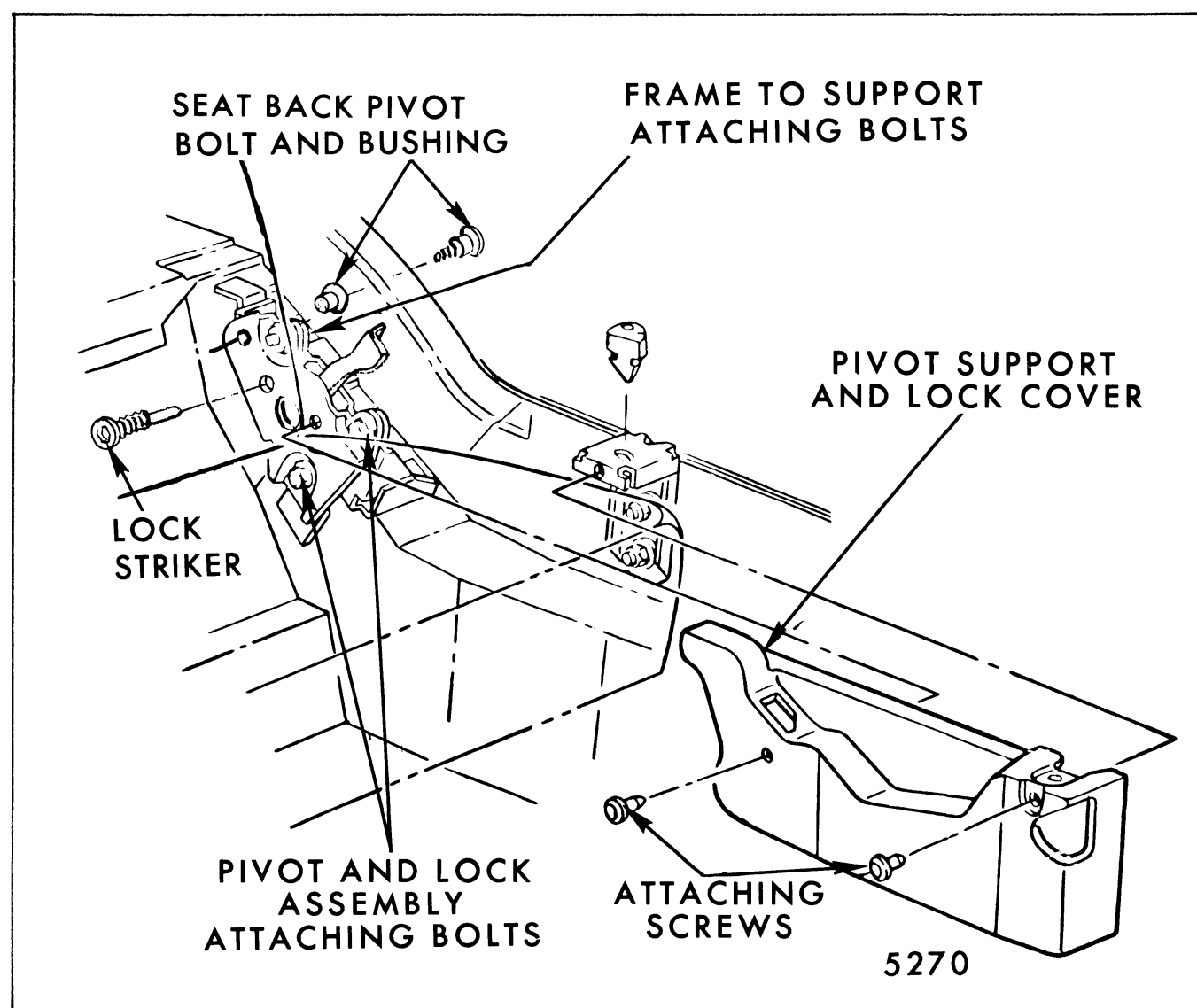


Fig. 9-77-Folding Third Seat Back Pivot and Lock Support Assembly - "A" Body Three-Seat Styles

3. Remove pivot support and lock cover.
4. Remove three pivot and lock assembly attaching bolts.
5. Lift seat back assembly upward to obtain access to the pivot and lock assembly to seat back panel attaching bolt.
6. To install, reverse removal procedure. Check operation of third seat to assure proper operation of lock.

### COMPARTMENT FLOOR PANEL ASSEMBLY (At Kick-Up) - All Styles (See Figs. 9-72, 9-73 and 9-74)

#### Removal and Installation

1. On "B" body three-seat styles, remove folding third seat back assembly as previously described.
2. On two-seat styles, remove luggage compartment front and rear panel assemblies (complete) as previously described.

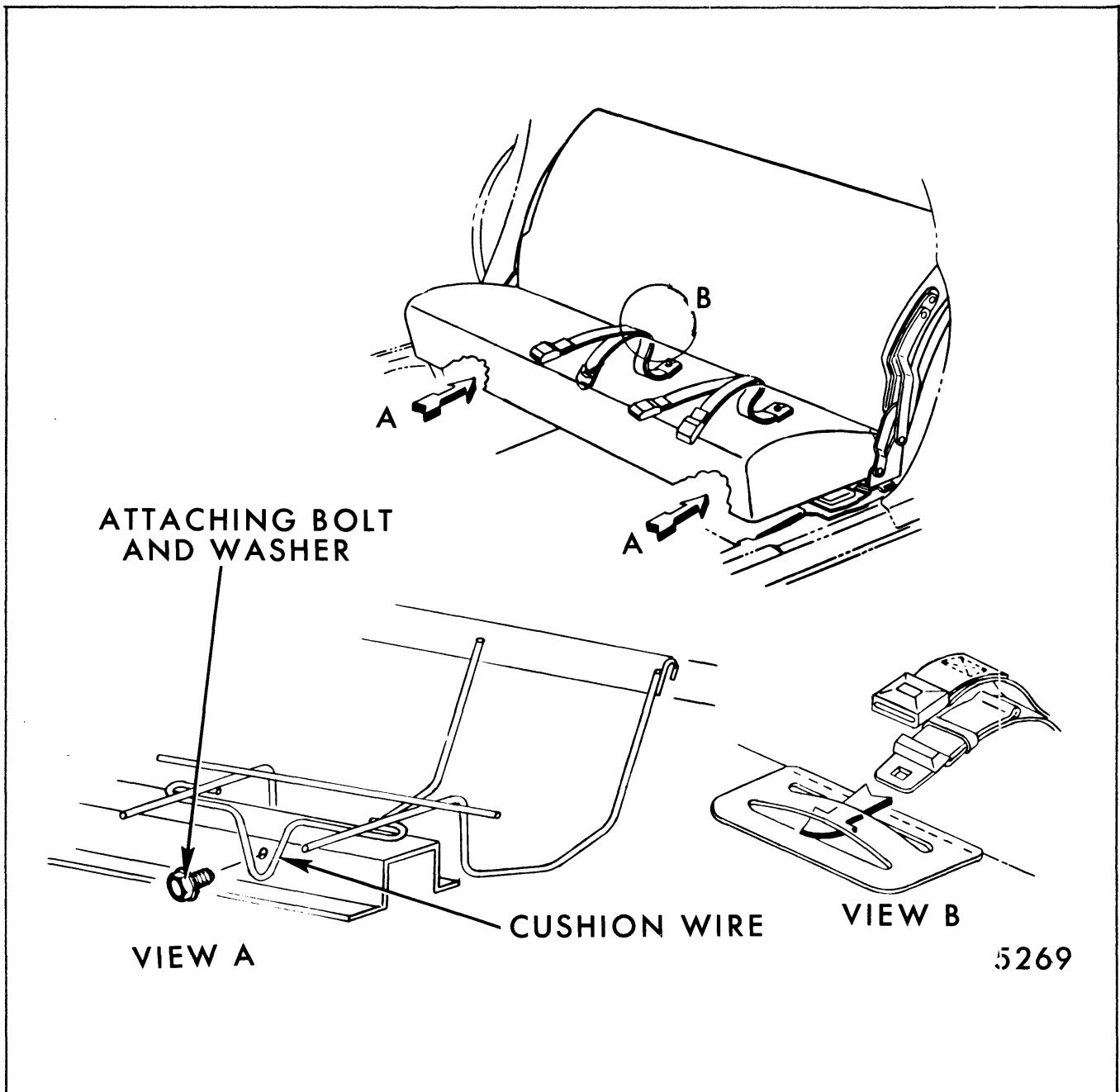


Fig. 9-78-Second Seat Cushion Attachment - "A" Body Two and Three-Seat Styles

On "A" body three seat styles raise third seat back sufficiently to gain access to panel-to-floor pan attaching screws at rear edge of panel.

3. On "B" styles directly under rear edge of compartment floor panel remove four screws securing panel to floor pan.

On "A" body three-seat styles remove seven (7) panel to floor pan attaching screws.

4. At front of compartment floor panel remove five screws securing panel to floor pan; then, remove compartment floor panel from body.
5. To install, reverse removal procedure.

## SECOND SEAT BACK FILLER PANEL - "A" Body Two and Three-Seat Styles and "B" Body Two-Seat Styles

### Removal and Installation

1. Remove compartment floor panel assembly (at kick-up) as previously described.
2. Along rear edge of filler panel, remove screws which secure panel to floor pan.
3. Fold filler panel forward sufficiently to remove screws which secure panel to folding 2nd seat back assembly and remove filler panel from body.
4. To install, reverse removal procedure.

## SECOND SEAT CUSHION - "A" Body Two-Seat and Three-Seat Styles

### Removal and Installation

1. Remove two (2) seat cushion wire attaching bolts at forward edge of seat cushion. Then, lift upward and pull forward on seat cushion to remove (Fig. 9-78).
2. To install, reverse removal procedure.

## FOLDING SECOND SEAT BACK TRIM PANEL AND LINKAGE ASSEMBLY - "A" Body Two-Seat and Three-Seat Styles

### Removal and Installation

1. Raise folding second seat back and remove second seat cushion.

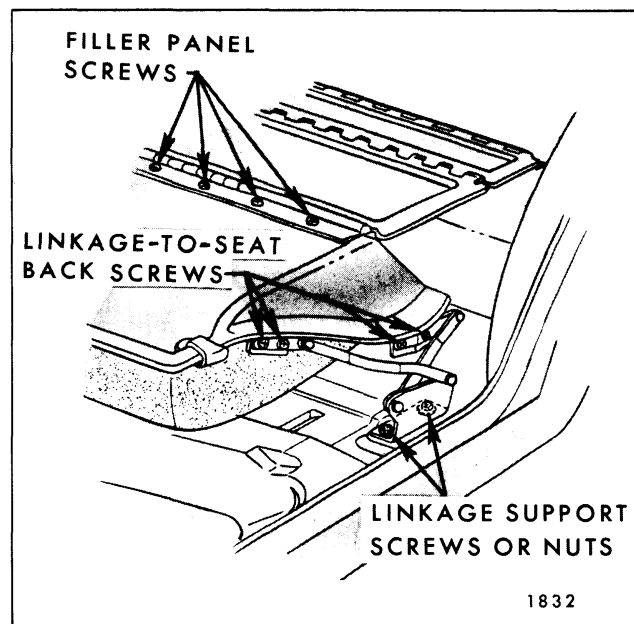


Fig. 9-79-Folding Second Seat Back Linkage and Filler Panel - "A" Body Two-Seat and Three-Seat Styles

2. On underside of folding second seat back remove screws securing rear floor filler panel hinge to seat back panel.

**NOTE:** Do not remove screws securing seat back trim assembly to seat back panel.

3. Mark position of folding second seat back linkage supports on floor pan. Remove nuts from both sides of seat back securing linkage supports to floor pan (Fig. 9-79).

Lift seat back assembly with attached linkage from body and place on a clean, protected surface.

4. To remove linkage from folding second seat back remove linkage-to-seat back panel attaching bolts and remove linkage (see Fig. 9-79).
5. To install, reverse removal procedure.

## FOLDING SECOND SEAT BACK LINKAGE ASSEMBLY (Right or Left Side) - "A" Body Two-Seat and Three-Seat Styles

If both right and left linkage assemblies are to be removed on full width second seat, remove second seat back trim, back panel and linkage assembly and remove linkage from seat back panel as described under "Folding Second Seat Back Trim, Panel and Linkage Assembly - Removal and Installation".

If one linkage assembly (right or left side) is to be removed proceed as follows:

### Removal and Installation

1. Remove second seat cushion.
2. Move folding second seat back forward just sufficiently to remove two lower linkage-to-seat back panel attaching screws (see Fig. 9-79).
3. Carefully return seat back to full up position; then, place a support under seat back assembly to support seat back in this position.
4. Remove two upper linkage-to-seat back panel attaching screws (see Fig. 9-79).
5. Remove nuts securing linkage support to floor pan, then, carefully remove linkage assembly from seat back and floor pan (see Fig. 9-79).
6. To install, reverse removal procedure.

### LUGGAGE COMPARTMENT LOCK CYLINDER - Two-Seat Styles

#### Removal and Installation

1. Open luggage compartment rear panel.

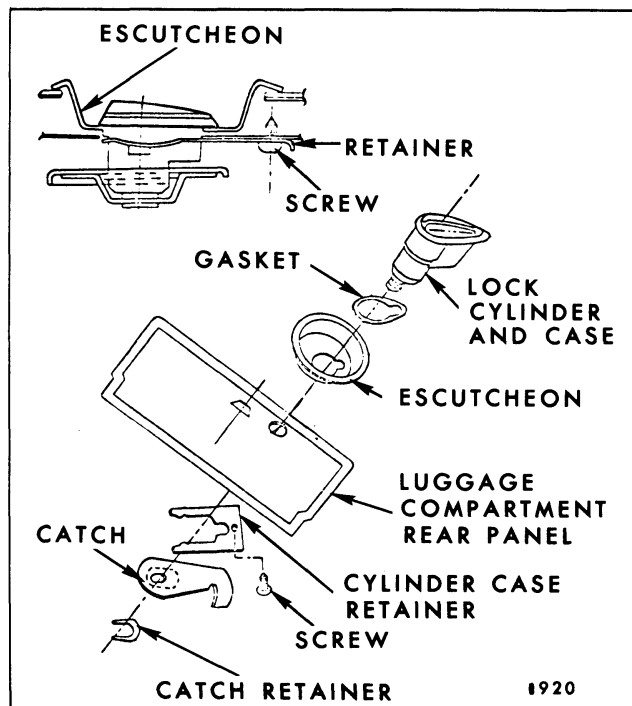


Fig. 9-80-Luggage Compartment Lock - "A" Body Styles

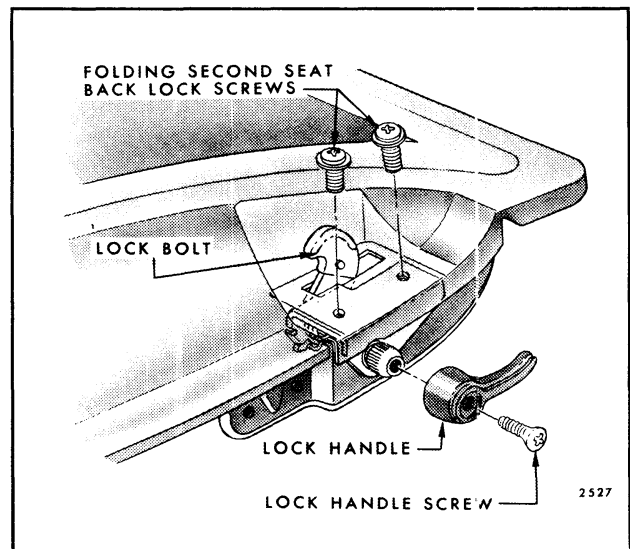


Fig. 9-81-Folding Second Seat Back Lock Installation - All "A and B" Station Wagons

2. On underside of luggage compartment rear panel remove catch retainer and catch from lock cylinder case, then, turn lock cylinder with key until cylinder can be removed from case (Fig. 9-80).
3. To install, reverse removal procedure.

### LUGGAGE COMPARTMENT LOCK

#### Removal and Installation

1. Open luggage compartment rear panel.

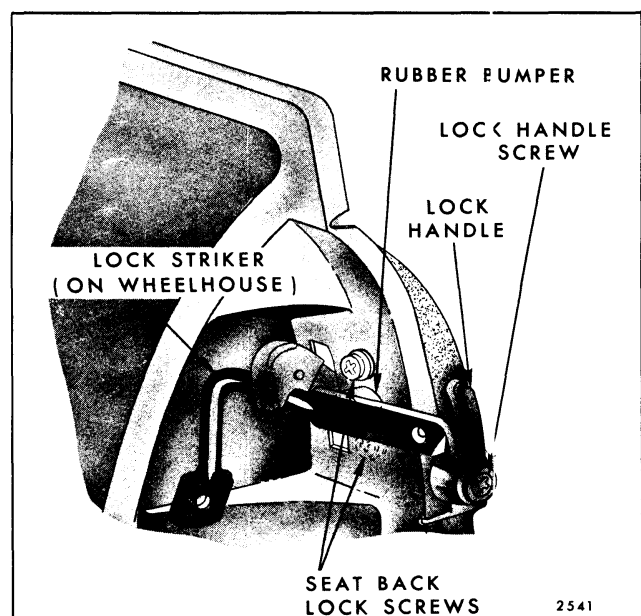


Fig. 9-82-Folding Second Seat Back Lock and Striker - All "A and B" Station Wagons



2. On underside of luggage compartment rear panel, remove catch retainer and catch (Fig. 9-80).
3. Remove lock cylinder case retainer screw and retainer; then, remove lock cylinder and case, gasket and escutcheon from panel (Fig. 9-80).
4. To install, reverse removal procedure.

## FOLDING SECOND SEAT BACK LOCK (Full Width or Split Seat) - All "A and B" Styles

### Description

The station wagon full width folding second seat incorporates a seat back lock located on the upper right side of the seat back. On styles with split second seat a seat back lock is located at the upper outer side of each seat back. The folding second seats can be

folded down by actuating the lock handle forward and pulling the seat back down.

### Removal and Installation

1. Remove folding second seat back trim and spring assembly, as previously described.
2. Remove seat back lock handle attaching screw and remove lock handle (Fig. 9-81).
3. Remove seat back lock retainer attaching screws (Fig. 9-74) and remove seat back lock retainer and lock from seat back panel (Fig. 9-81).
4. To install seat back lock assembly, reverse removal procedure. A small amount of lock adjustment is available to obtain proper engagement of lock bolt with lock striker on wheelhouse as shown in Figure 9-82.

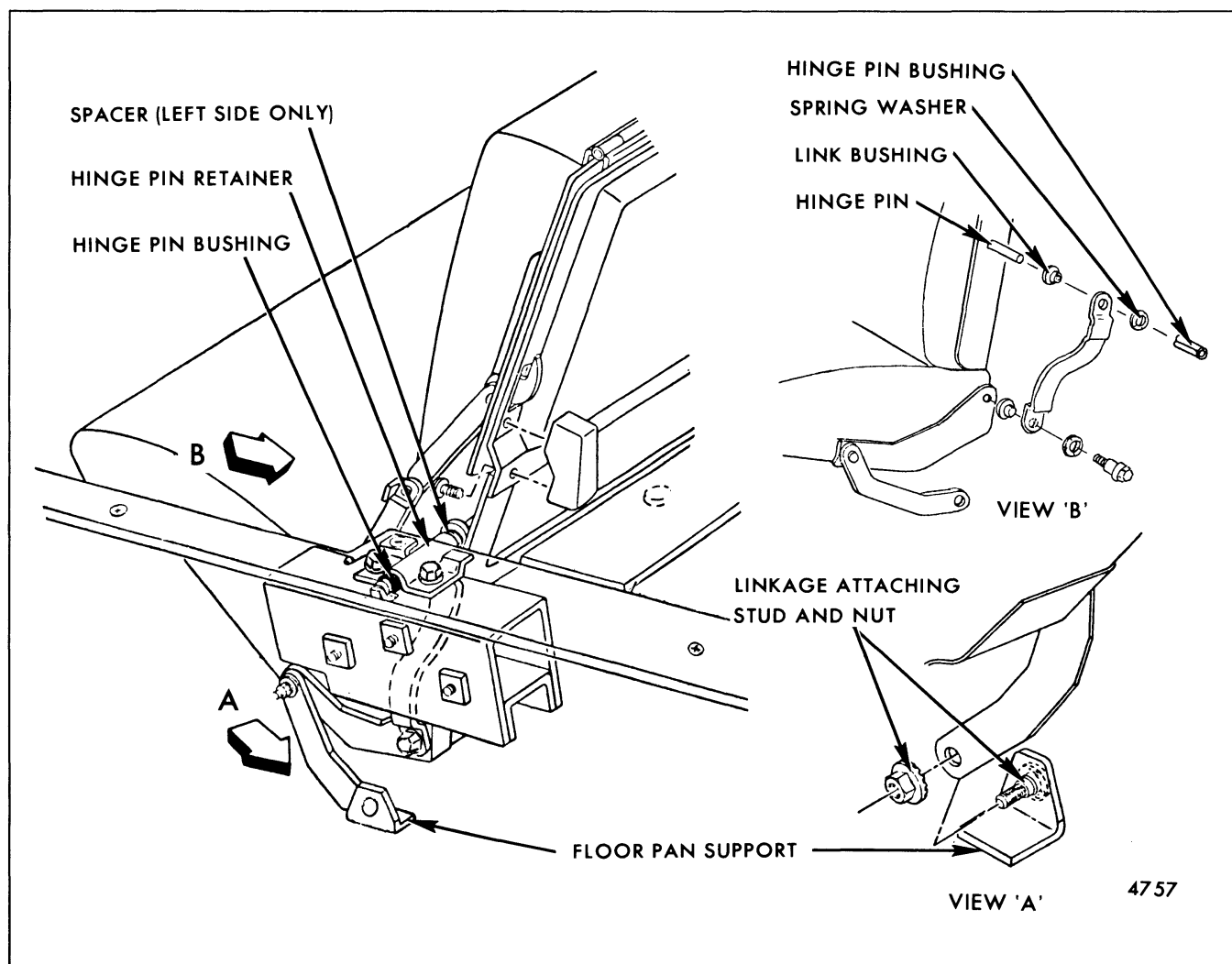


Fig. 9-83-Third Seat Cushion, Back and Linkage - "B" Body Three-Seat Station Wagon

## FOLDING SEATS AND LOAD FLOOR PANELS - "B" Body Station Wagons

The "B" body "35" style two-seat station wagon second seat and load floor panels are very similar to the past model (see Fig. 9-73).

The "B" body three-seat station wagon has a split second seat (2/3 left side and 1/3 right side) see Figure 9-73. The 1/3 right side second seat has a dual action linkage which allows the seat to be moved either forward for access or entrance into the third seat area or allows the seat back to be lowered into load floor position. The dual action linkage incorporates two separate locks which lock the seat and the seat back when the seat is in the up (sitting) position and also locks out either action of the linkage while the other linkage action is in operation.

The 2/3 left side second seat linkage allows the seat back to be placed in load floor position only. The seat back incorporates a positive acting seat back lock which locks the seat back in the up (sitting) position.

The forward facing third seat can also be folded into load floor position and incorporates a lock at the lower right side of the seat which locks the seat in the up (sitting) position.

## FOLDING THIRD SEAT CUSHION AND BACK ASSEMBLIES - "B" Body Three-Seat Styles

### Removal and Installation

1. Lift third seat to raised (sitting) position.
2. To remove third seat cushion assembly, remove linkage to cushion attaching bolt (Fig. 9-83) at both sides of seat cushion and remove cushion assembly from body.
3. To remove third seat back assembly perform Step 2; then, remove both right and left rear floor side filler panels and remove seat back hinge pin retainer (Fig. 9-83) from both sides of seat back. Remove seat back assembly including filler panel from body.
4. To remove third seat cushion and back as an assembly, remove cushion linkage-to-floor pan support attaching bolt (Fig. 9-83); then, perform Step 3 and with aid of a helper lift seat cushion and back assembly, including linkage and back filler panel, from body.
5. To install seat cushion, seat back or seat cushion and back assembly, reverse removal procedure. Make sure hinge pin bushing (see Fig. 9-83) is installed over hinge pin at both sides of seat back prior to installing retainers.

## FOLDING THIRD SEAT BACK LOCK AND LOCK STRIKER - "B" Body Three-Seat Station Wagons

### Removal and Installation

1. Partially lower seat back to a point where seat back lock is accessible for removal.
2. Using an internal drive hex-head wrench, remove seat back lock assembly from lower right corner of seat back panel.
3. To remove lock striker use an internal star-drive wrench or equivalent.
4. To install seat back lock or lock striker reverse removal procedure, engage lock spring under tab on seat back panel. Tighten lock assembly 14-22 ft. lbs. Tighten lock striker 22-34 ft. lbs.

## FOLDING THIRD SEAT BACK TRIM, FOAM PAD AND FOUNDATION BOARD ASSEMBLY - "B" Body Three-Seat Station Wagons

### Removal and Installation

1. Raise luggage compartment panel and prop in

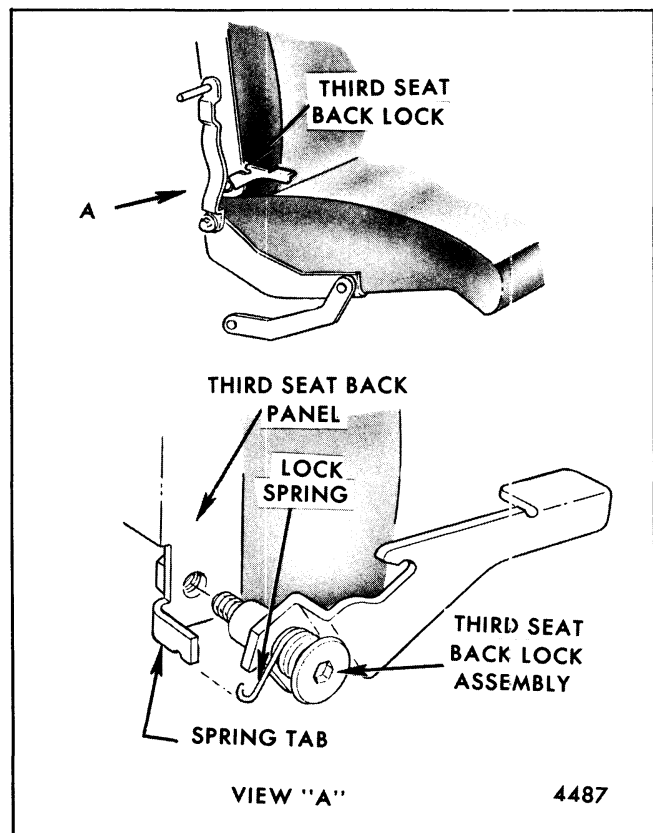


Fig. 9-84-Folding Third Seat Back Lock - "B" Body Three-Seat Station Wagon

"up" position. Lower third seat back sufficiently to gain access (through luggage compartment) to attaching screws along bottom of seat back.

2. Working through luggage compartment remove three screws along bottom of seat back panel securing foundation board to seat back panel.
3. Raise third seat back sufficiently to pull lower edge of trim, foam pad and foundation board forward; then, lift assembly upward to disengage upper edge of assembly from hanger tabs on seat back panel and remove assembly.
4. To install assembly, reverse removal procedure.

### SECOND SEAT CUSHION - "B" Body "35" Style and "45" Styles 2/3 Second Seat

To remove the second seat cushion on two seat styles or the second 2/3 seat cushion on three seat styles, remove both the right and left side seat linkage-to-

floor pan front bolt (see Figs. 9-85 and 9-86); then, lift cushion upward to disengage cushion retainers from floor pan studs, and remove cushion. To install, reverse removal procedure.

To remove the right side second seat cushion (1/3 seat) on three-seat station wagon styles, place the seat assembly in the forward position. From under both rear and front of seat cushion remove bolts securing cushion assembly to inner and outer rear linkage (see Figs. 9-86 and 9-87) and to front linkage; then, remove cushion assembly.

### FOLDING SECOND SEAT BACK TRIM, FOAM PAD AND WIRE MAT ASSEMBLY - "A" and "B" Body Two-Seat and Three-Seat Station Wagons

#### Removal and Installation

1. Lower folding second seat back to load floor position, leave filler panel against seat back.

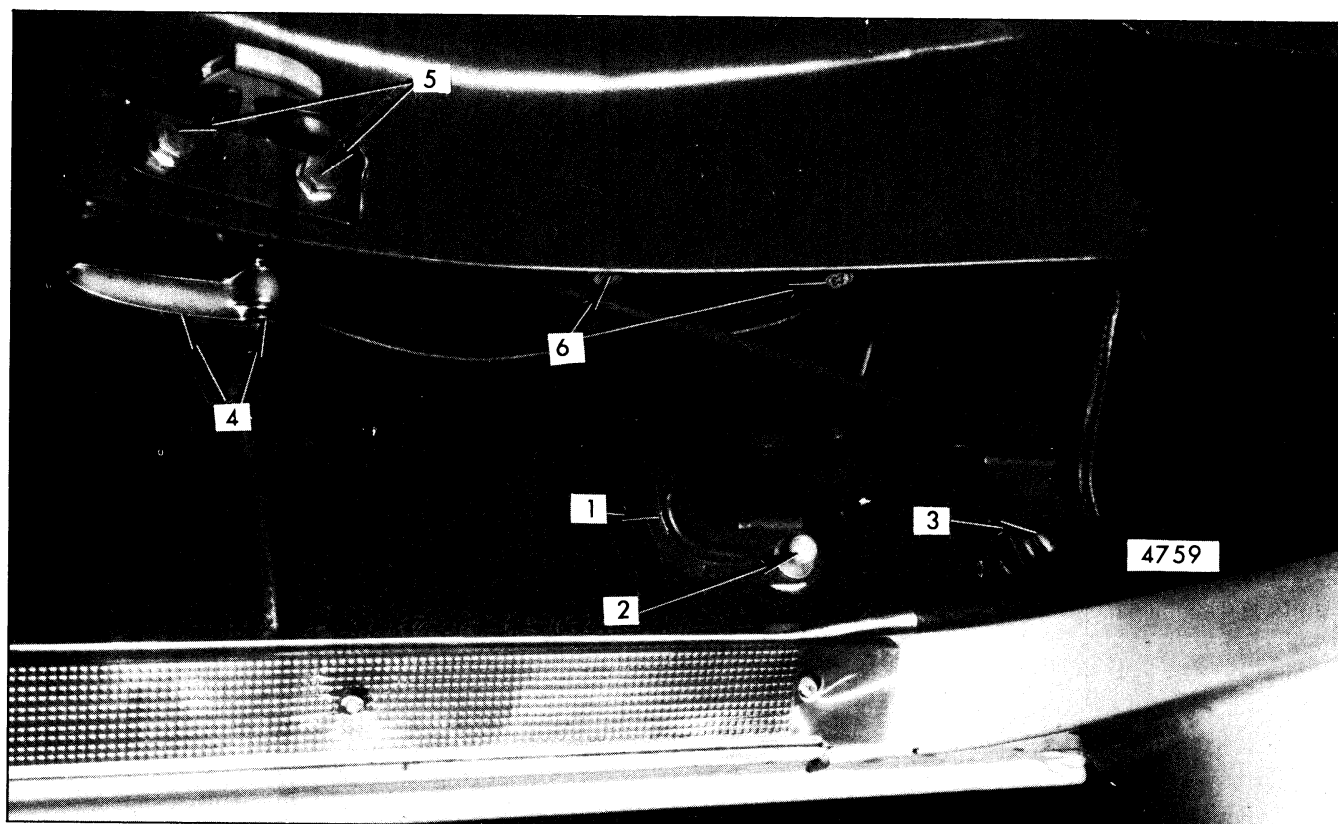


Fig. 9-85-Folding Second 2/3 Seat Back Outer Linkage and Seat Back Lock - "B" Body Three-Seat Station Wagon Shown - Two-Seat Station Wagon Typical

- |  |   |  |  |
|--|---|--|--|
| 1. 2/3 Cushion Outer Retainer - Same Retainer Used on Both Sides of Two-Seat Station Wagon Second Seat Cushion | 2. Cushion and Linkage-to-Floor Pan Attaching Nut and Finishing Cap | 3. Lap Belt and Linkage-to-Floor Pan Attaching Bolt - Torque | 5. Lock Retainer and Lock Attaching Screws |
|  | 4. Lock Handle and Attaching Screw                                  |  | 6. Linkage-to-Seat Back Attaching Screws   |

2. At bottom of seat back and at cut-outs in filler panel piano hinge, remove trim and foam pad wire mat attaching screws.
3. Raise seat back sufficiently to pull lower edge of trim, foam pad and wire mat forward; then, lift assembly upward to disengage upper edge of assembly from hanger tabs on seat back panel and remove assembly.
4. To install, reverse removal procedure - use awl

or suitable tool to locate wire mat attaching holes through bottom of seat back panel.

### FOLDING SECOND SEAT BACK AND FILLER PANEL ASSEMBLY (Less Linkage) - "B" Body Three-Seat Station Wagons

#### Removal and Installation

1. Lower seat back to load floor position, leave filler panel against seat back.

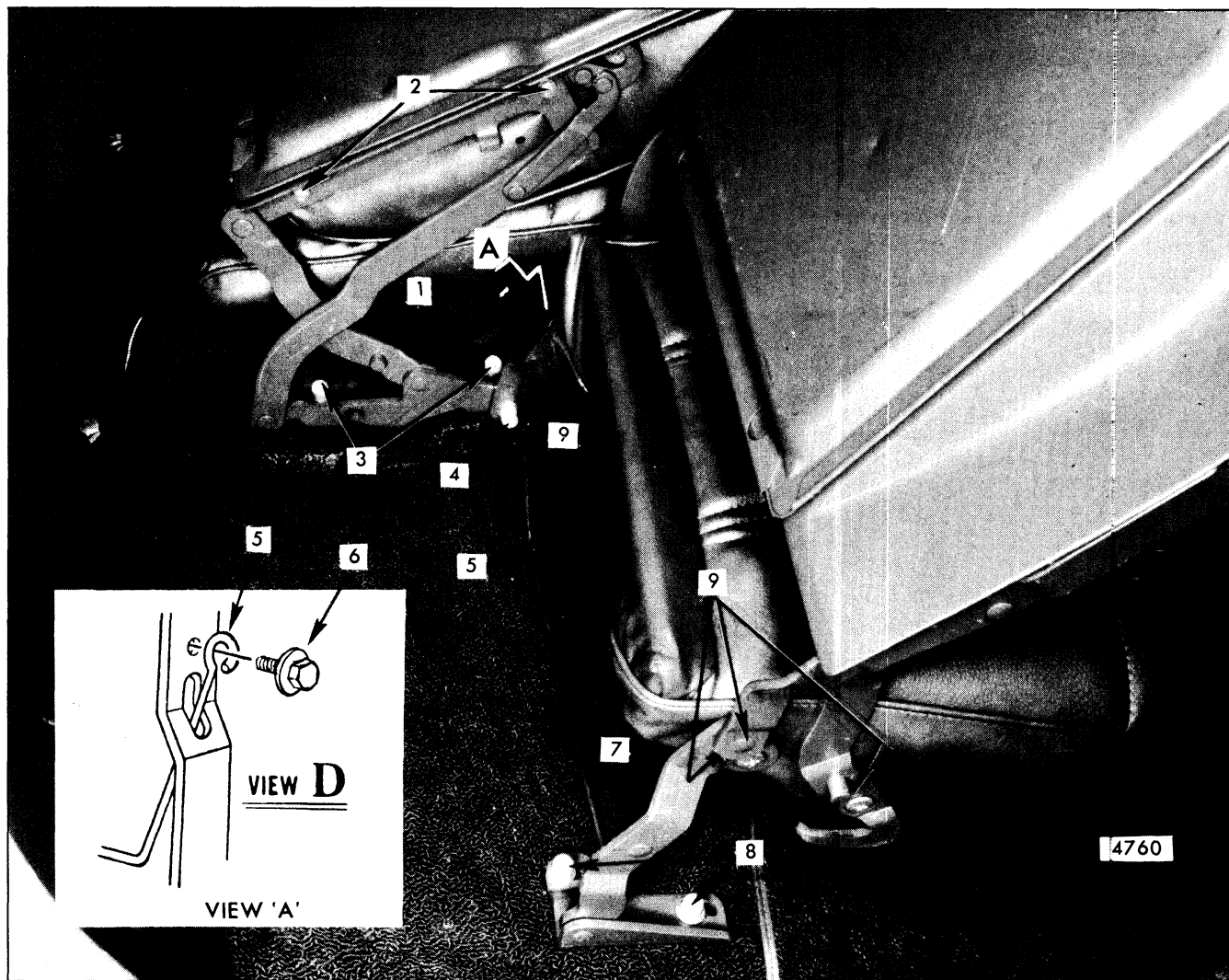


Fig. 9-86-Folding Second 2/3 Seat Back Inner Linkage and 1/3 Seat Back Outer Linkage - "B" Body Three-Seat Station Wagon

- |  |  |   |   |
|--|--|---|---|
| 1. 2/3 Seat Cushion Inner Attachment-Cushion Wire Frame Secured Under Linkage Attaching Nut and Stud Cap | 3. 2/3 Seat Back Inner Linkage-to-Floor Pan Attaching Nuts and Stud Caps                 | 5. 1/3 Seat Assist Torque Rod   | 8. 1/3 Seat Outer Linkage-to-Floor Pan Attaching Nuts and Stud Caps |
| 2. Linkage-to-Seat Back Attaching Screws   | 4. 1/3 Seat Back Inner Linkage-to-2/3 Seat Back Inner Linkage Attaching Nut and Stud Cap | 6. 1/3 Seat Assist Torque Rod-to-Inner Linkage Attaching Bolt                 | 9. 1/3 Seat Outer Linkage-to-Seat Cushion Frame Attaching Screws    |
|  |  | 7. Location of Assist Torque Rod-to-Floor Pan Stud Attaching Nut and Stud Cap |   |

2. At both right and left side of seat back, remove linkage to seat back panel attaching screws (Fig. 9-86) and remove seat back assembly with filler panel from linkage.
3. To install second seat back and filler panel assembly, reverse removal procedure.

### FULL WIDTH FOLDING SECOND SEAT BACK LINKAGE ASSEMBLY - "A" and "B" Body Two and Three-Seat Styles and Second (2/3) Seat Back Outer Linkage Assembly - "B" Body Three-Seat Styles

#### Removal and Installation

1. Lower folding second seat back to load floor position, leave filler panel against seat back.
2. Remove linkage-to-seat back panel attaching screws, then remove linkage-to-floor pan attaching screws (Figs. 9-85 and 9-86) and remove linkage assembly.
3. To install linkage assembly, reverse removal procedure.

### FOLDING SECOND (2/3) SEAT BACK ASSEMBLY AND/OR (2/3) SEAT BACK INNER LINKAGE ASSEMBLY - "B" Body Three-Seat Station Wagon

#### Removal and Installation

1. Remove 2/3 seat cushion assembly.
2. Loosen 1/3 seat torque rod-to-floor pan attaching nut (see Fig. 9-86, No. 7). Move 1/3 seat forward to a position where torque is relieved from rod; then, remove torque rod nut.
3. Remove 1/3 seat back inner link-to-2/3 seat back inner link attaching nut (Fig. 9-86).
4. Remove 2/3 seat back inner linkage-to-floor pan attaching bolts or nuts (Fig. 9-86).
5. Remove 2/3 seat back outer linkage-to-floor pan attaching bolts or nuts (Fig. 9-85); then, remove second 2/3 seat assembly including linkages from body.
6. If removing inner linkage assembly, remove inner linkage to seat back panel attaching screws as a bench operation and remove linkage assembly from seat back.

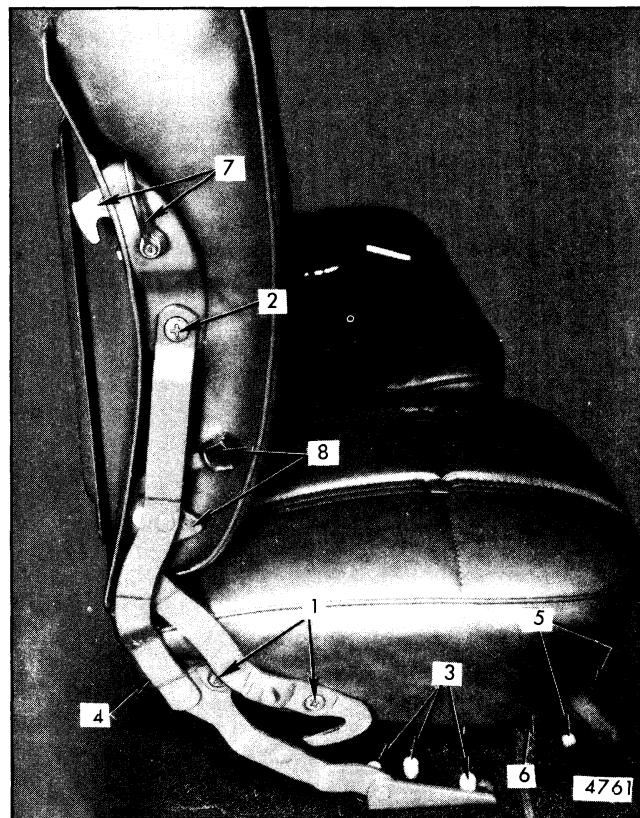


Fig. 9-87-Folding Second 1/3 Seat Back Outer Linkage, Seat Back Lock and Linkage Lock - "B" Body Three-Seat Station Wagon

- |   |   |
|---|---|
| 1. 1/3 Seat Outer Linkage-to-Cushion Frame Attaching Screws                     | 6. 1/3 Seat Front Linkage-to-Cushion Frame Attaching Bolts (Under Front of Seat)  |
| 2. 1/3 Seat Outer Linkage-to-Seat Back Panel Attaching Screw                    | 7. Seat Back Lock-When released seat can be tilted forward for access to third seat area                                  |
| 3. 1/3 Seat Outer Linkage-to-Floor Pan Attaching Nuts and Stud Caps             | 8. Seat Linkage Lock-When released after seat back lock has been released seat back can be lowered to load floor position |
| 4. 1/3 Seat Outer Linkage-to-Cushion Frame Attaching Bolts (Under Rear of Seat) |   |
| 5. 1/3 Seat Front Linkage-to-Floor Pan Attaching Nuts and Stud Caps             |   |
7. To install second 2/3 seat back or inner linkage assembly, reverse removal procedure. Make sure bushing and spring washer are installed at 1/3 seat back inner link-to-2/3 seat back inner linkage attachment (Fig. 9-86, No. 4).

## **FOLDING SECOND (1/3) SEAT ASSEMBLY (Including Inner, Outer and Front Linkage Assemblies) - "B" Body Three-Seat Station Wagon**

### **Removal and Installation**

1. Loosen torque rod-to-floor pan attaching nut (Fig. 9-86, No. 7). Move 1/3 seat forward to a position where torque is relieved from rod; then, remove torque rod nut.
2. Move 1/3 seat to full forward position, and remove nut securing 1/3 seat back inner link to 2/3 seat back inner link (see Fig. 9-86).
3. Remove 1/3 seat cushion front linkage-to-floor pan stud caps and attaching nuts (Fig. 9-87).
4. Remove 1/3 seat back outer linkage-to-floor pan stud caps and attaching nuts (Fig. 9-87); then, remove seat assembly, including all attached linkages, from body.

Linkage assemblies may be removed from 1/3 seat, as required. Refer to Figures 9-86 and 9-87 for 1/3 seat linkage attachments.

5. To install 1/3 seat assembly, reverse removal procedure. Make sure that bushing and spring washer is installed at 1/3 seat back inner link-to-2/3 seat back inner link (see Fig. 9-86, No. 4).

## **FOLDING SECOND (1/3) SEAT BACK OUTER LINKAGE ASSEMBLY - "B" Body Three-Seat Station Wagon**

### **Removal and Installation**

1. Fold right 1/3 seat back to a position where seat back outer linkage-to-seat back screws, indicated in Figures 9-86 and 9-87, are accessible; then, remove screws.
2. Remove seat back outer linkage-to-seat cushion screws (Fig. 9-87) and outer linkage to seat back panel screw.
3. Remove seat back outer linkage-to-floor pan attaching stud caps and nuts at locations indicated in Figure 9-87; then, remove outer linkage from seat.
4. To install 1/3 seat back outer linkage assembly, reverse removal procedure.

## **LAP BELTS AND SHOULDER BELTS - General Information-All Styles**

The new front seat "One Buckle" three point belt and warning system incorporates a "Fasten Seat Belt" reminder light and buzzer designed to warn the driver and/or passenger if their lap belt(s) are not fastened when car is driven forward. The one buckle three point system is equipped with outboard self adjusting and locking retractors and is designed for coupling the shoulder belt to the "D" ring portion of the lap belt by engaging an integral lock pin on the shoulder belt into a slotted hole in the lap belt "D" ring.

The shoulder belt may remain coupled to the lap belt at all times, if so desired, or it can be disconnected and stored along the side roof rail and the lap belt used independently.

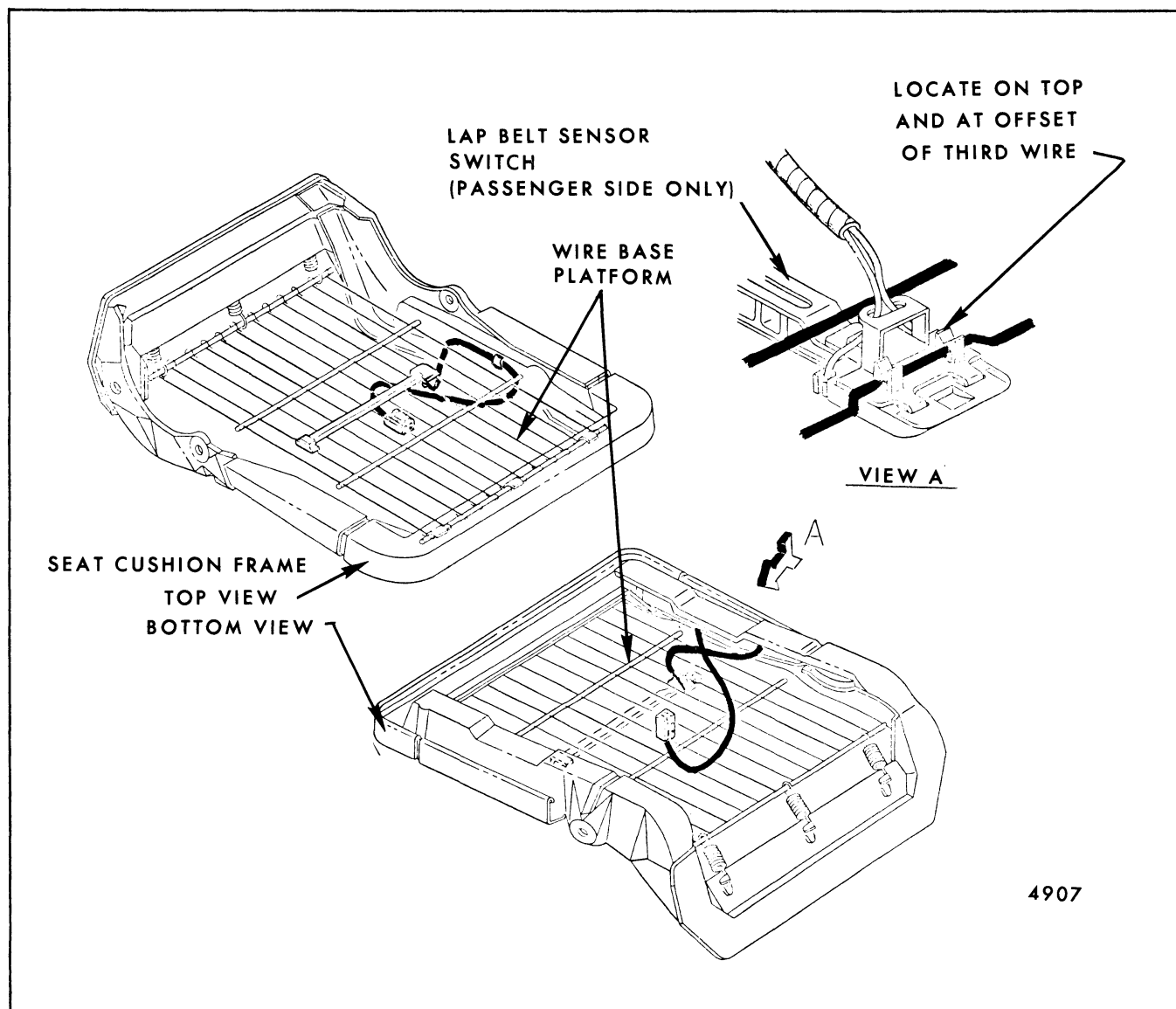
### **WARNING LIGHT AND BUZZER PASSENGER SEAT SENSOR SWITCH (Beam Type Switch Under Seat) - All Bucket Seats Except Swivel Shell Bucket**

A warning light and buzzer sensor switch is located

under the passengers seat cushion on top of the cushion spring wire unit. The sensor switch closes when someone sits on the passengers seat which completes the warning light and buzzer circuit. When the passenger buckles his lap belt the circuit is opened by the switch in the lap belt retractor unit.

### **Removal and Installation**

1. Disconnect sensor feed wire at connector under passengers seat.
2. Detach seat assembly from floor pan or seat from adjusters and tilt seat rearward.
3. Detach sensor switch feed wire clip from seat frame and both ends of switch from spring wire unit; then, remove switch by working switch between wires of spring and wire unit.
4. To install sensor switch, reverse removal procedure making certain switch is attached to offset of third wire on spring and wire units (see Fig. 9-88).



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Fig. 9-88-Lap Belt Warning Light and Buzzer Passenger Seat Sensor Switch (Beam Type Switch Under Seat) - All Bucket Seats Except Swivel Shell Bucket

### WARNING LIGHT AND BUZZER PASSENGER SEAT SENSOR SWITCH - All Full Width Seats, 60-40 and 50-50 Seats (Pressure Sensitive Type Switch Under Trim Cover)

1. Remove seat adjuster-to-floor pan attaching bolts and tilt seat rearward (passenger seat only on 60-40 and 50-50 seats).
2. Remove right adjuster from seat frame.
3. Detach trim cover from right side of seat cushion sufficiently to gain access to sensor switch.
4. Disconnect sensor switch wire at connector under seat.
5. Carefully break cement bond securing sensor switch to foam pad; then, pull sensor wire up through hole in foam pad and remove switch and wire.
6. To install sensor switch, reverse removal procedure. Prior to installing a new sensor switch remove adhesive protective paper from bottom surface of switch.

### WARNING LIGHT AND BUZZER PASSENGER SEAT SENSOR SWITCH - Swivel Shell Bucket Seat (Pressure Sensitive Type Switch Under Trim Cover)

1. Carefully disengage edge of trim cover from

shell bucket frame around lower portion of seat sufficiently to gain access to sensor switch.

2. Disconnect sensor switch wire at connector under seat.
3. Carefully break cement bond securing sensor switch to foam pad; then, with seat in forward position pull sensor wire up through holes in swivel assembly and hole in foam pad and remove switch and wire (see Fig. 9-89).
4. To install sensor switch, reverse removal procedure. Prior to installing a new sensor switch, remove adhesive protective paper from bottom surface of switch (see Fig. 9-89).

## SERVICING LAP AND SHOULDER BELTS

Before servicing or replacing lap belts and shoulder belts, refer to the following precautionary items:

1. Lap belts must be serviced in matched sets.
  - a. DO NOT replace one-half of lap belt or shoulder belt set.

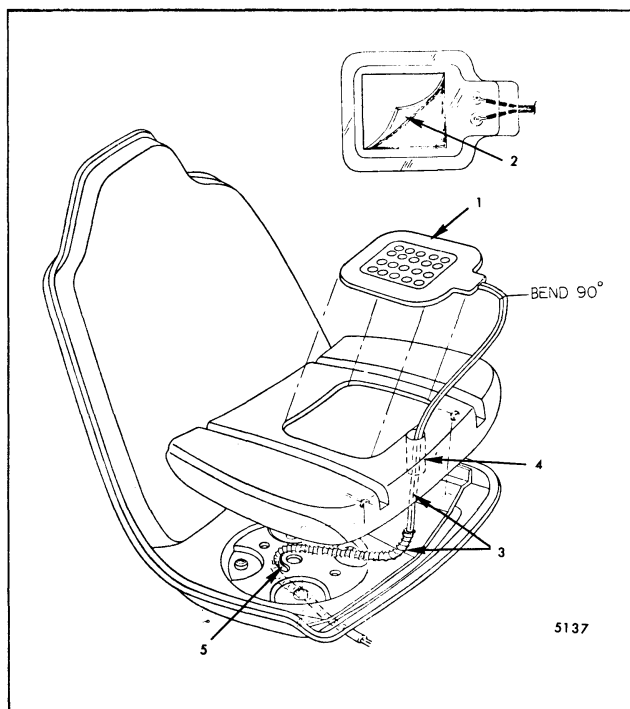


Fig. 9-89-Lap Belt Warning Light and Buzzer Sensor Switch - Swivel Shell Bucket Seat

- |   |   |
|---|---|
| 1. Sensor Switch  | 4. Hole in Foam Pad for Switch Wire                     |
| 2. Adhesive Protective Paper on Lower Surface of Switch | 5. Holes in Swivel Assembly for Switch Wire and Conduit |
| 3. Switch Wire and Protective Conduit                   |   |

b. DO NOT intermix standard and deluxe lap belts or shoulder belts on front or rear seats.

2. Keep sharp edges and damaging objects away from lap belts or shoulder belts.
3. Exercise caution to avoid bending or damaging any portion of the belt buckle or latch.
4. Do not bleach or re-dye belt or strap webbing (clean with a mild soap solution and water).
5. When installing lap belt or shoulder belt anchor bolt, start bolt by hand to assure that bolt is threaded straight.
6. DO NOT attempt repairs on lap belt retractor mechanisms or retractor cover. Replace defective part with NEW service replacement parts.

**WARNING:** LAP BELT TO FLOOR PAN ANCHOR FASTENERS AND SHOULDER BELT TO ROOF RAIL, REAR QUARTER, OR REAR SEAT TO BACK WINDOW PANEL FASTENERS ARE IMPORTANT ATTACHING PARTS IN THAT THEY COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS, AND/OR COULD RESULT IN MAJOR REPAIR EXPENSE. THEY MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THESE PARTS.

7. DO NOT attempt to remove retractor cover. Retractor covers are not designed to be removed from the retractor. The retractor cover and the long rivet securing the cover to the retractor are not available as service replacement parts.
8. Tighten lap belt or shoulder belt floor pan anchor bolts to specified torque - 24 to 45 ft. lbs. Tighten shoulder belt roof rail, quarter panel or rear seat-to-back window panel anchor bolts - 12 to 18 ft. lbs.

**NOTE:** Specified 1/2 inch - 13 UNC - 2A bolts must be used for all lap belt and shoulder belt floor pan anchorages. Shoulder belt roof rail, quarter panel or rear seat-to-back window panel anchorages use specified 5/16 inch - 18 UNC - 2A bolts.



## LAP BELTS AND SHOULDER BELTS

### Removal and Installation

Refer to illustrations on following pages and select the appropriate illustration for removing and installing lap belts and shoulder belts.

**WARNING:** LAP BELT TO FLOOR PAN ANCHOR FASTENERS AND SHOULDER BELT TO ROOF RAIL, REAR QUARTER, OR REAR SEAT TO BACK WINDOW PANEL FASTENERS ARE IMPORTANT ATTACHING PARTS IN THAT THEY COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS, AND/OR COULD RESULT IN MAJOR REPAIR EXPENSE. THEY MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THESE PARTS.

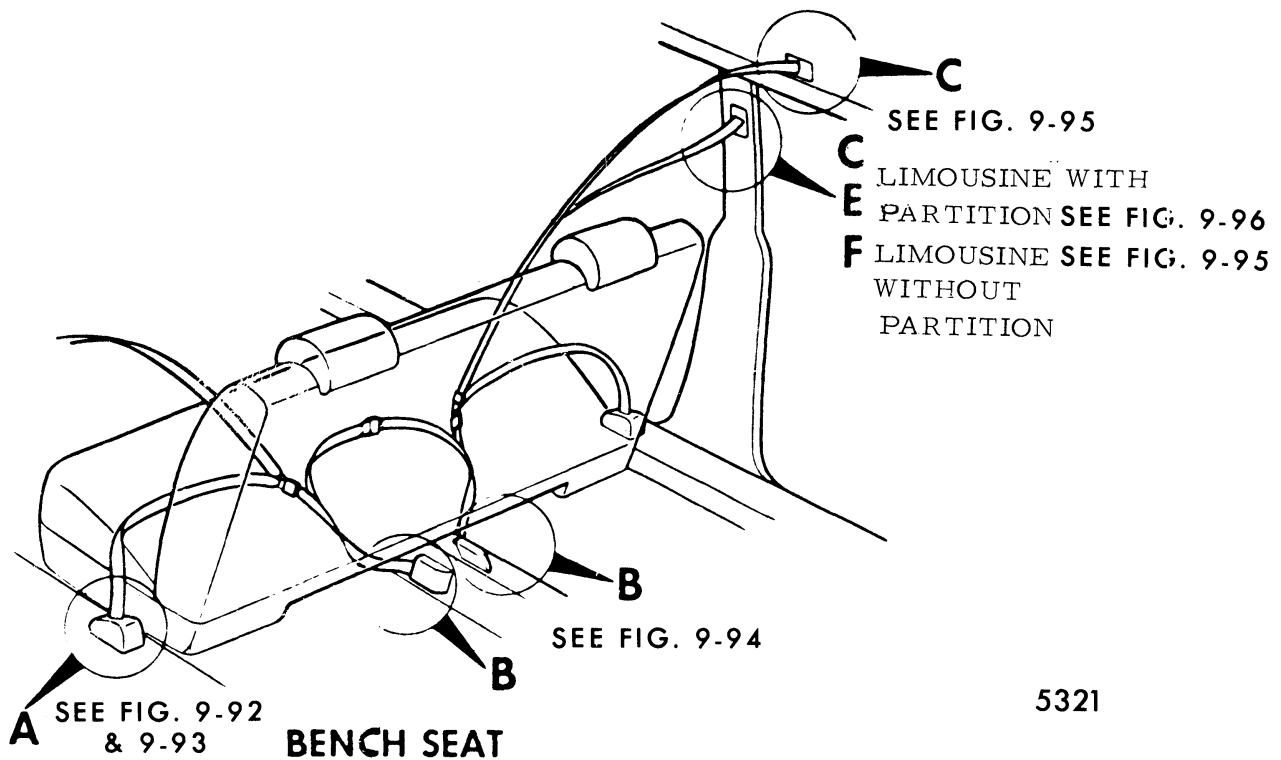
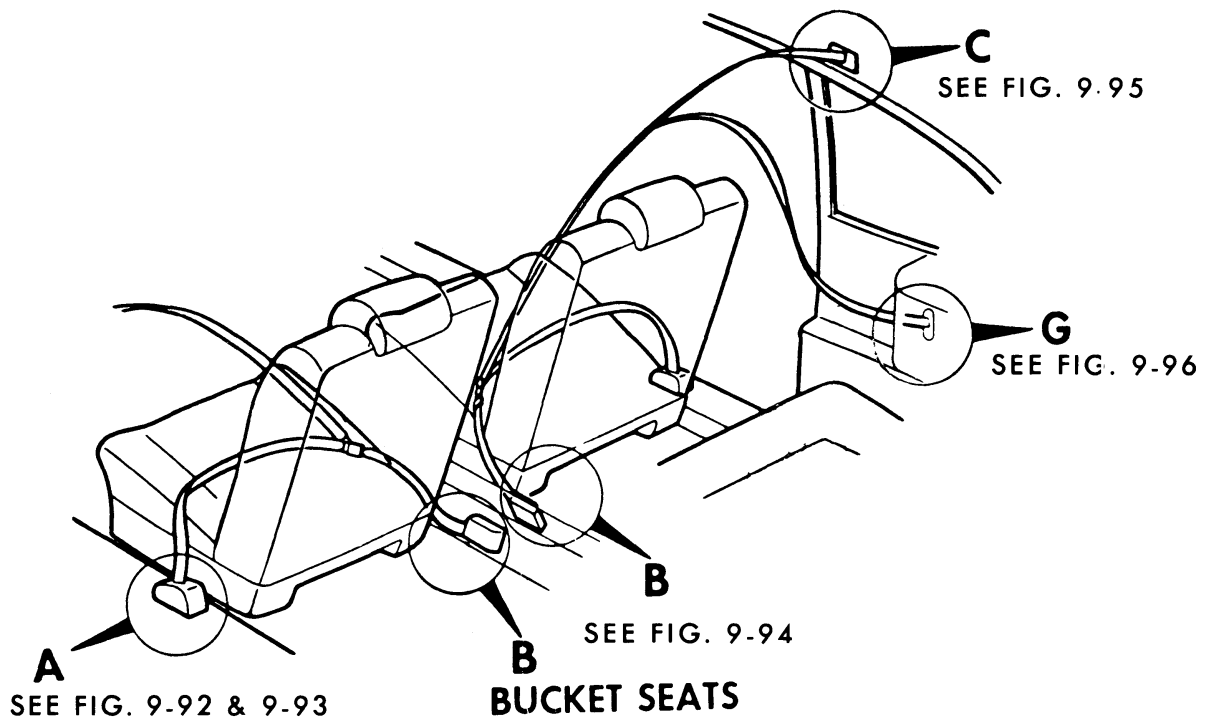
Check position of factory installed lap belt and shoulder belt anchors and reinstall anchor plates in

same position. Care must be exercised when making installation that all anchor plates interlock, as shown in illustrations.

To remove full width seat inner lap belt(s) from seat, remove anchor bolts at floor pan and carefully pull floor anchor end of belt through lap belt protector. When installing belts **TIGHTEN ANCHOR BOLTS 24 TO 45 LBS.** On two-door styles, it is important that seat belt webbing is routed over seat back outer hinge arm and **NOT** under arm.

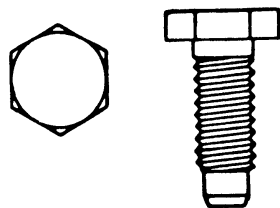
**WARNING:** INTERNAL DRIVE SELF THREADING ANCHOR BOLTS ARE USED TO SECURE LAP BELTS TO THE FLOOR PAN. TO REMOVE OR INSTALL INTERNAL DRIVE ANCHOR BOLTS, USE DOOR LOCK STRIKER AND LAP BELT ANCHOR BOLT REMOVAL TOOL J-23457 OR EQUIVALENT. BOLTS MUST BE STARTED BY HAND TO ASSURE THAT BOLT IS THREADED STRAIGHT.

**WARNING:** On front seat belts where retractor anchor bolt is under retractor cover, carefully pry open retractor access hole cover at top and sides; then, disconnect warning light and buzzer wire and remove anchor bolt.



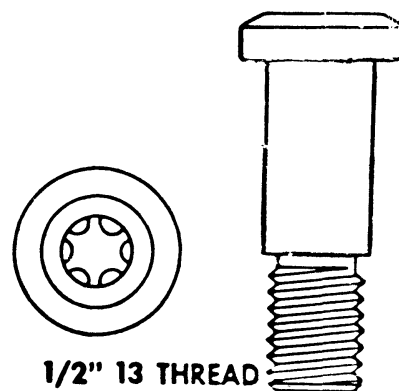
5321

Fig. 9-90-Front Seat Lap Belt Attaching Locations - All Styles



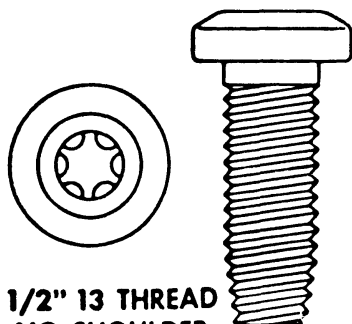
5/16 18 THREAD  
NO SHOULDER

**TYPE 1**



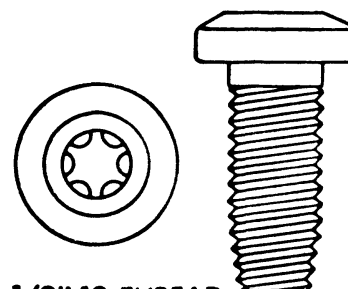
1/2" 13 THREAD  
WITH SHOULDER

**TYPE 2**



1/2" 13 THREAD  
NO SHOULDER

**TYPE 3**



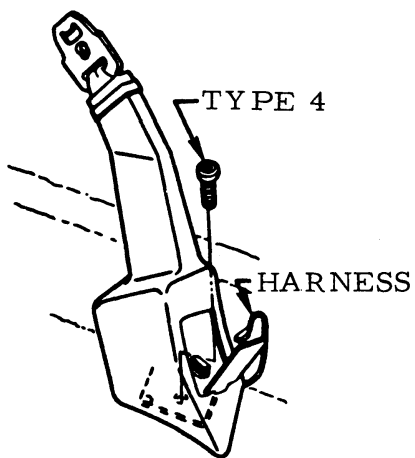
1/2" 13 THREAD  
NO SHOULDER

**TYPE 4**

**ANCHOR BOLTS**

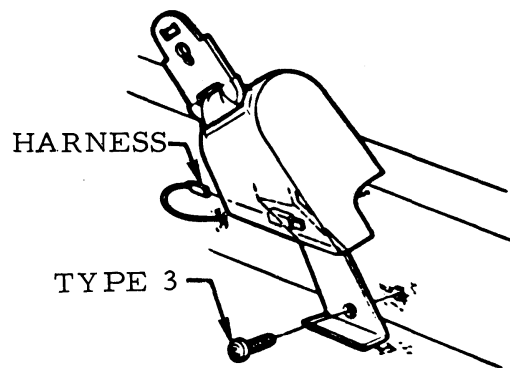
5322

Fig. 9-91-Front Seat Lap Belts - Types of Anchor Bolts - All Styles



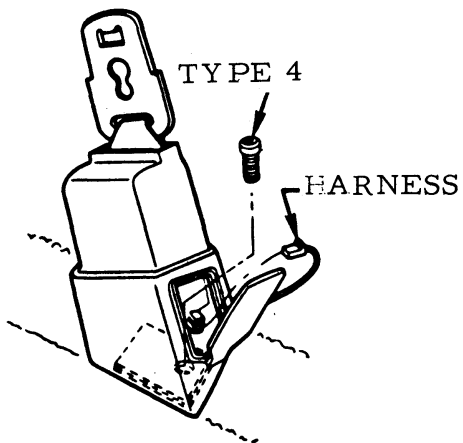
**"A" STYLE  
SIX-WAY POWER SEAT**

**VIEW A**



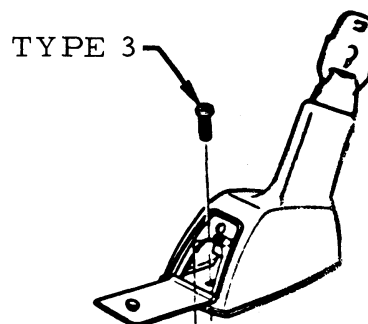
**"F" STYLE**

**VIEW A**



**"A" STYLE  
SWIVEL SEAT**

**VIEW A**



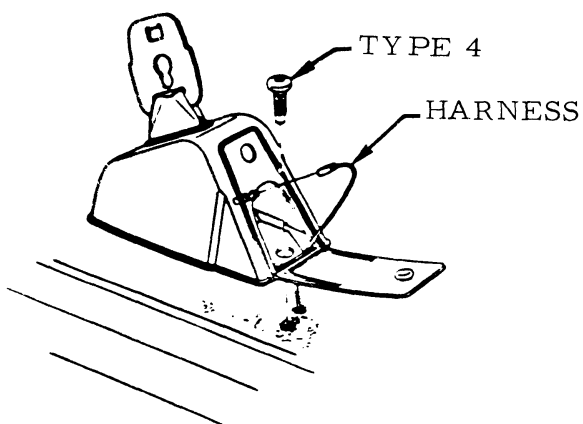
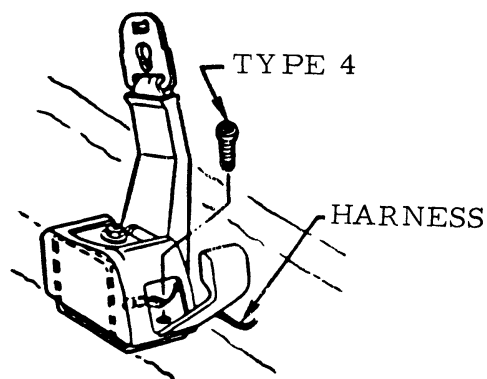
**"X" STYLES**

**VIEW A**

**5323**

## **FRONT SEAT - OUTER**

Fig. 9-92-Front Seat Outer Lap Belts and Retractors

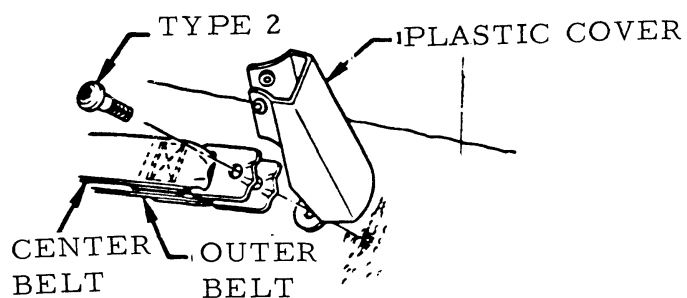
**"B-C-D-E" STYLES****VIEW A****"A" STYLES  
MANUAL SEAT****VIEW A**

## CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL FLOOR ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

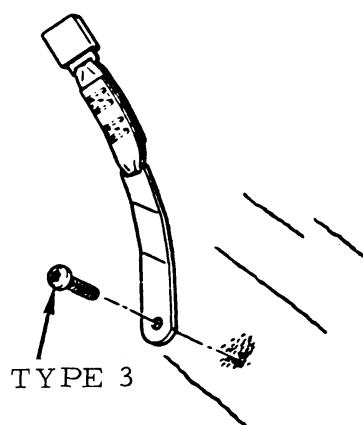
# FRONT SEAT - OUTER

5324

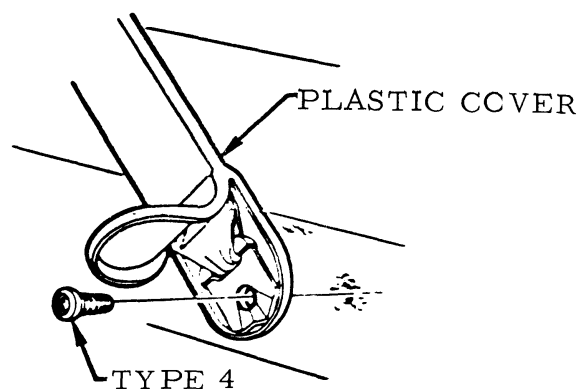


VIEW B  
"B-C & E" STYLES

### BENCH SEAT



VIEW B  
"F-X" STYLES

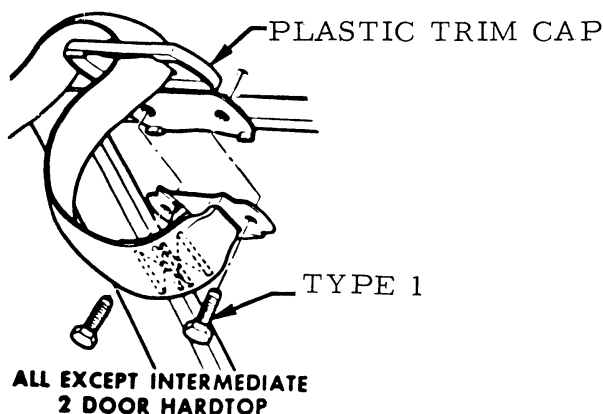


VIEW B  
"A" STYLES AND 40/40 SEATS

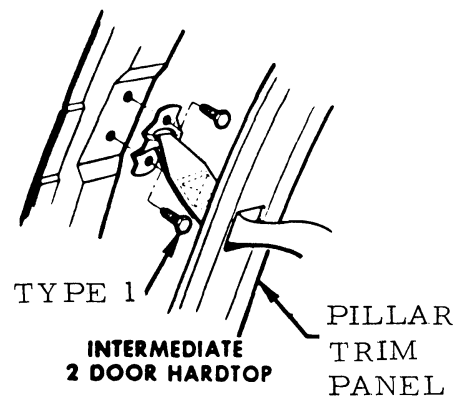
### BUCKET SEAT

5325

### FRONT SEAT - INNER

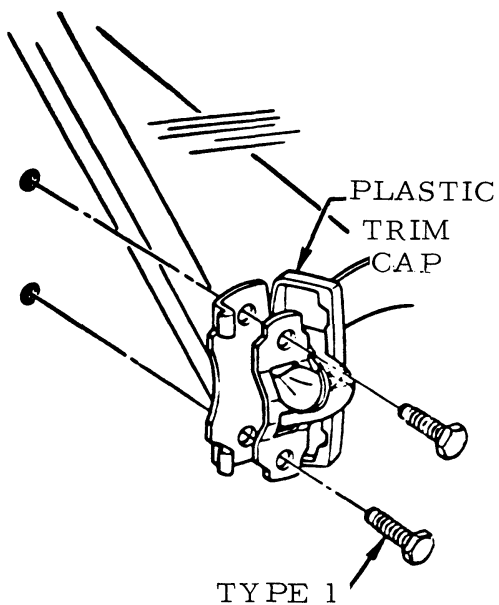


VIEW C



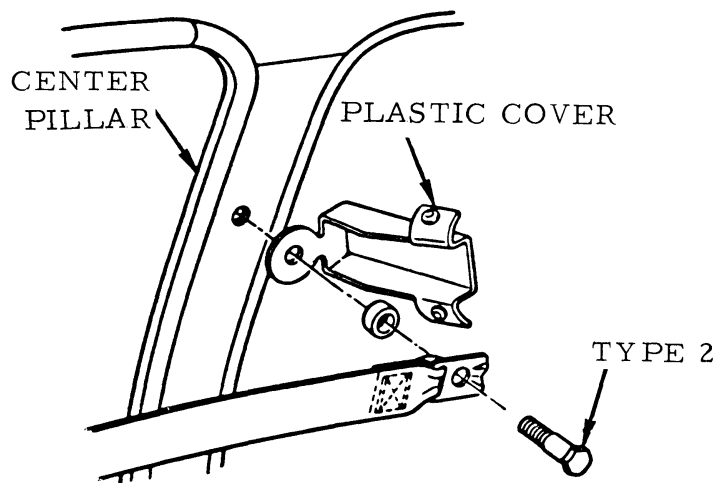
VIEW C

**ALL STYLES LESS LIMOUSINE  
AND SEDAN DELIVERY  
AND CONVERTIBLE**



**SEDAN DELIVERY**

VIEW C



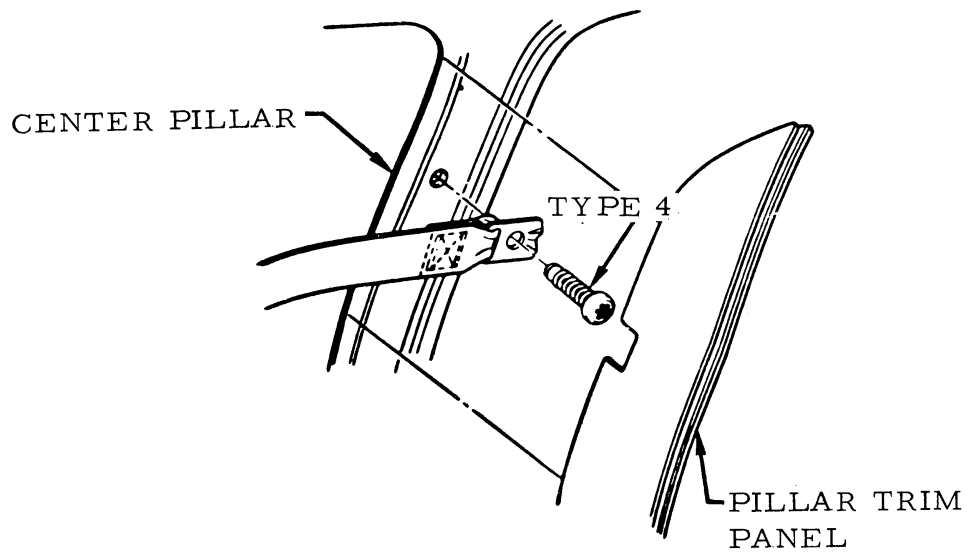
**LIMOUSINE  
WITHOUT CENTER  
PARTITION**

VIEW C

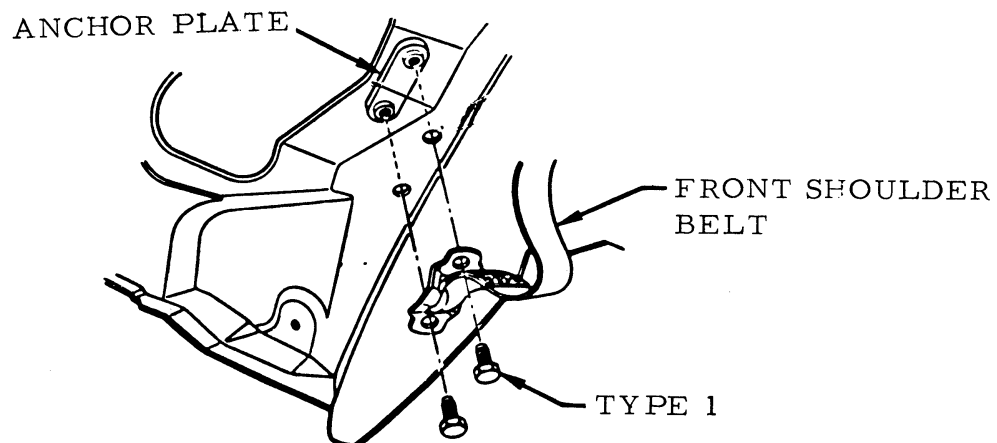
**SHOULDER BELT ATTACHMENT**

**5326**

Fig. 9-95-Front Seat Shoulder Belts - All Styles Except Limousine "33" Style and Convertibles



VIEW F  
**LIMOUSINE  
WITH CENTER  
PARTITION**

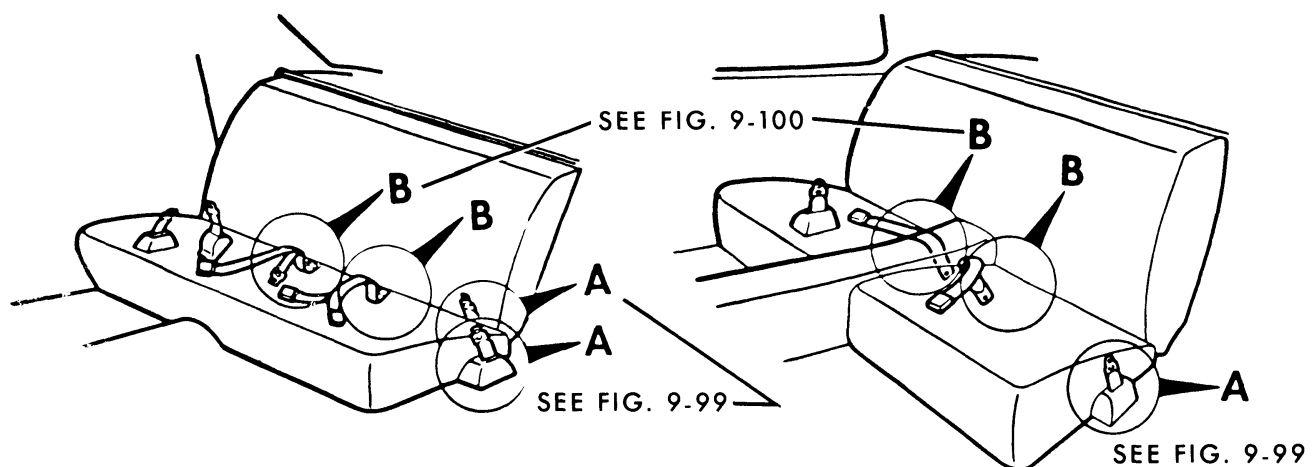
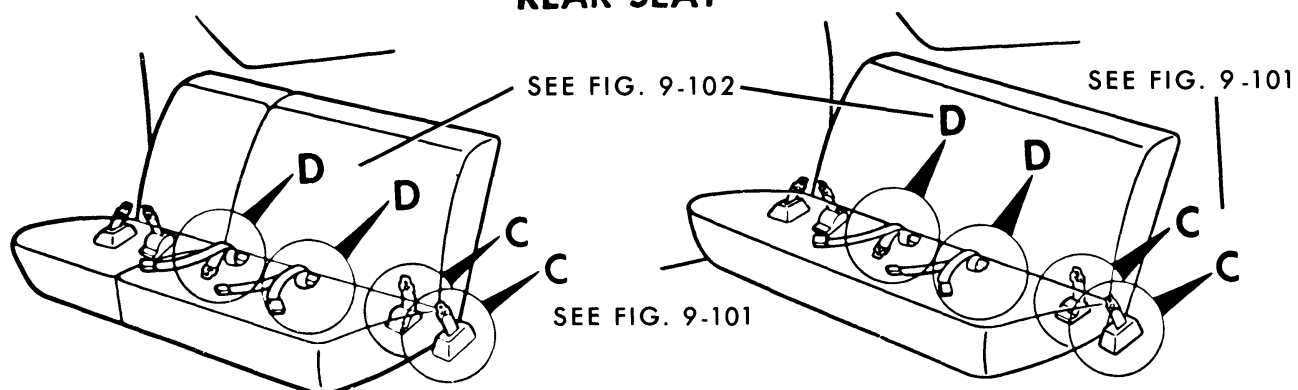
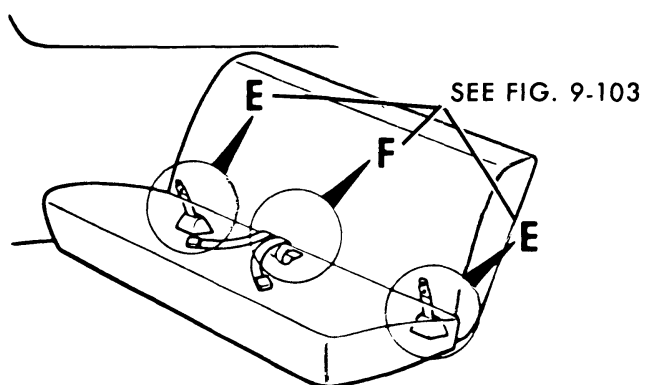


VIEW G  
**CONVERTIBLE**

5327

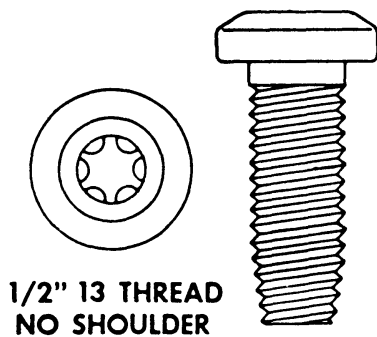
Fig. 9-96-Front Seat Shoulder Belts - Convertible Styles and Limousine "33" Style



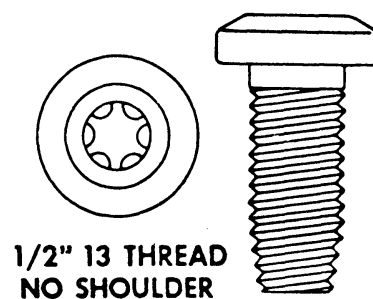
**REAR SEAT****STATION WAGON SECOND SEAT****STATION WAGON THIRD SEAT**

5328

Fig. 9-97-Rear Seat Lap Belt Attaching Locations - All Styles



**TYPE 1**



**TYPE 2**

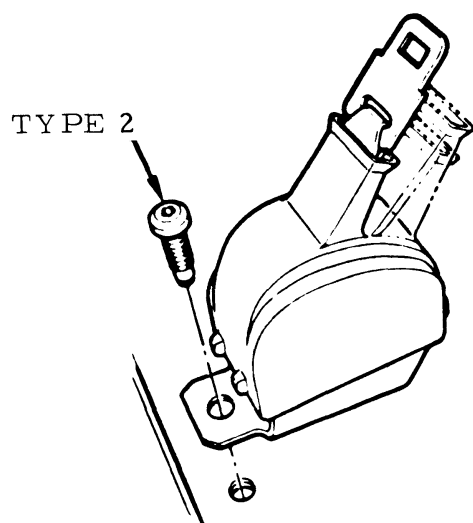
## CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL FLOOR ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

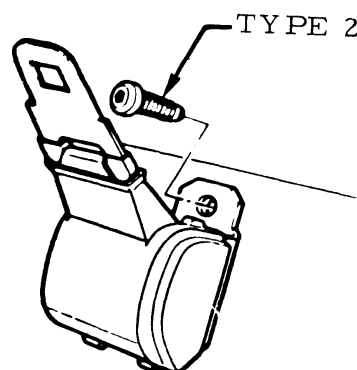
## ANCHOR BOLTS

5329

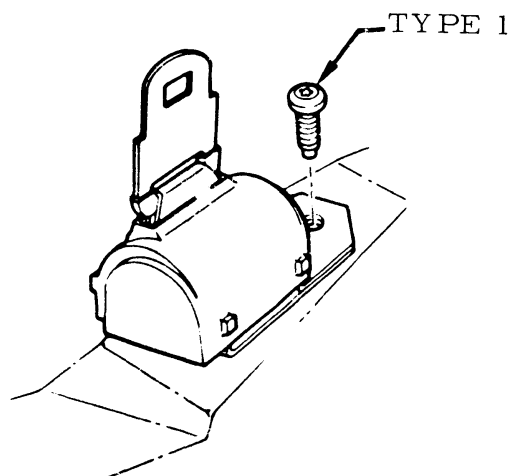
Fig. 9-98-Rear Seat Lap Belt - Types of Anchor Bolts - All Styles



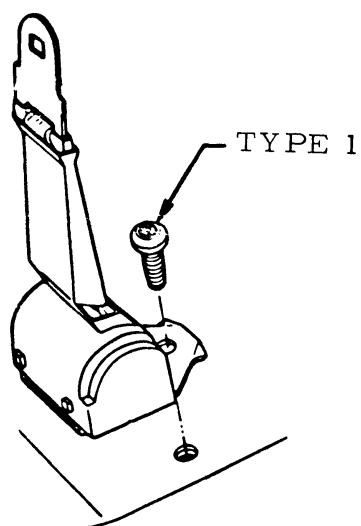
"B-C-D-E" STYLES  
VIEW A



"A" STYLES  
VIEW A



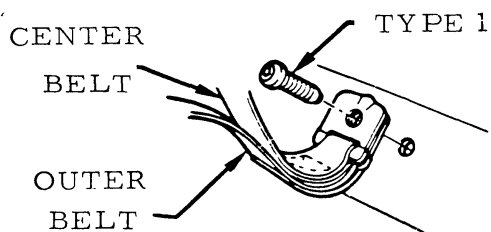
"F" STYLES  
VIEW A



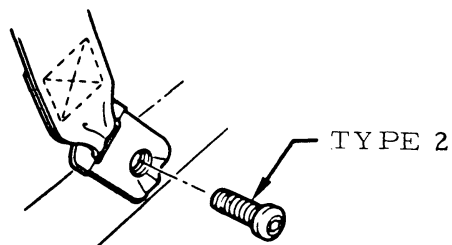
"X" STYLES  
VIEW A

## REAR SEAT - OUTER

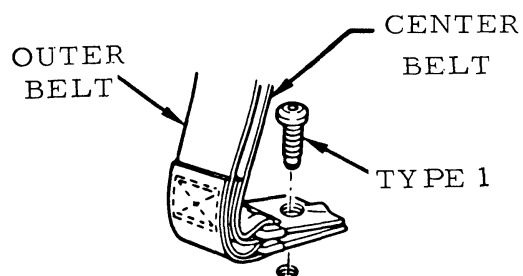
5330



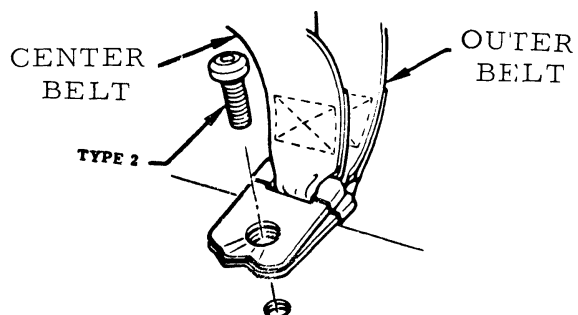
VIEW B



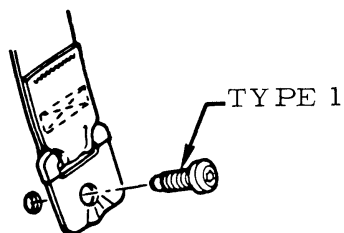
VIEW B



VIEW B



VIEW B



VIEW B

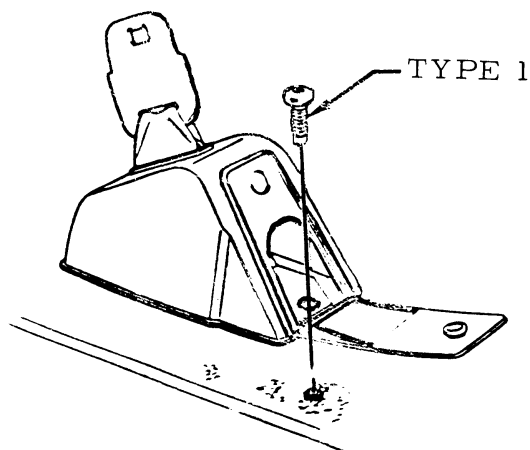
## CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL FLOOR ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

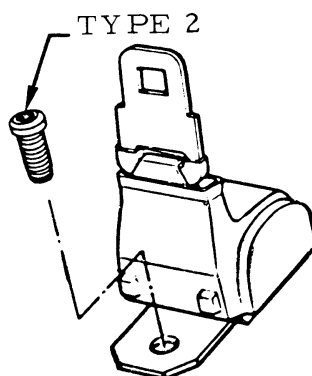
## REAR SEAT - INNER

5332

Fig. 9-100-Rear Seat Inner Lap Belts - All Styles



"B" STYLES



"A" STYLES

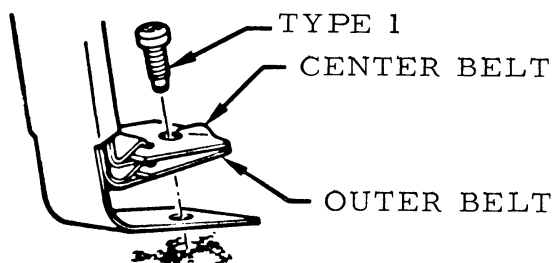
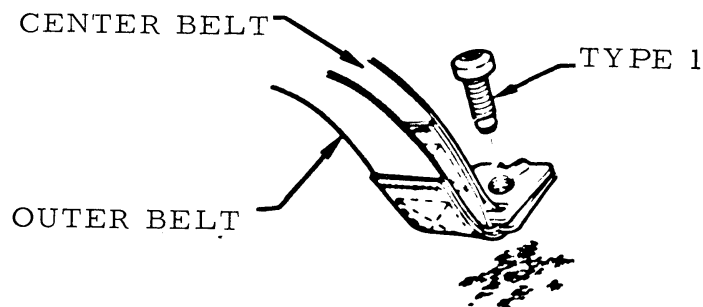
VIEW C

## CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

# STATION WAGON SECOND SEAT - OUTER

5333



### RIGHT SIDE OF THREE SEAT WAGON

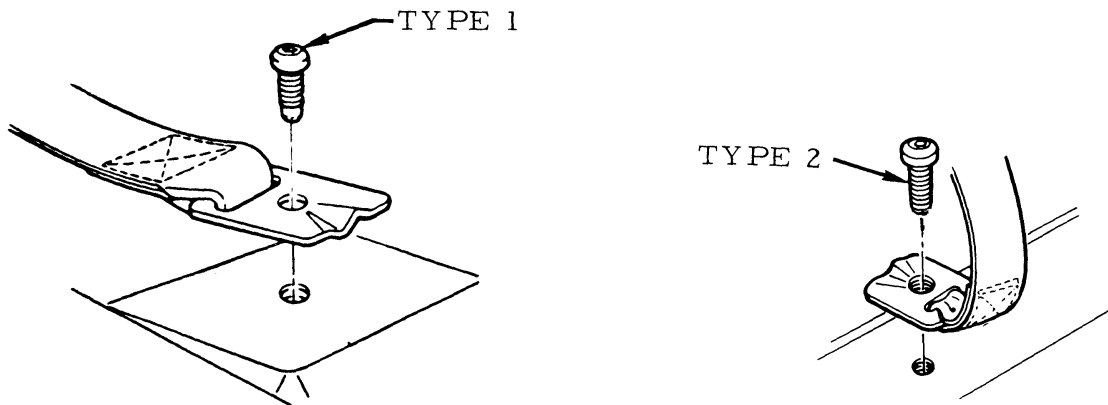
VIEW D

## CAUTION

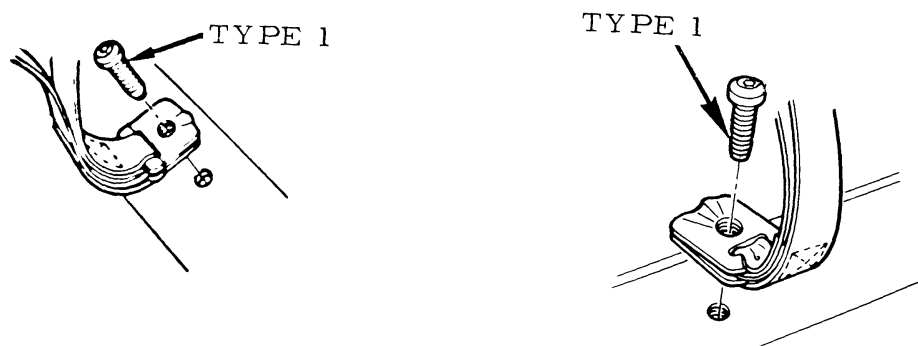
CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

## STATION WAGON SECOND SEAT - INNER

5334



VIEW E

**STATION WAGON THIRD SEAT - OUTER**

VIEW F

**STATION WAGON THIRD SEAT - INNER**

5335

## SECTION 10

## ELECTRICAL

### INDEX

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Description .....	10-41	Circuit Checking Procedure.....	10-62
Diagnosis Chart .....	10-41		

## INTRODUCTION

The body electrical equipment for all body styles is covered in the following sections:

- A. General Checking Procedures
- B. Power Windows
- C. Power Tail Gate Window and Tail Gate
- D. Power Seats
- E. Exterior and Interior Lamps
- F. Electric Door Locks
- G. Electric Seat Back Lock Release
- H. Electric Back Window Grid Defogger
- I. Back Window Defogger (Blower Type)

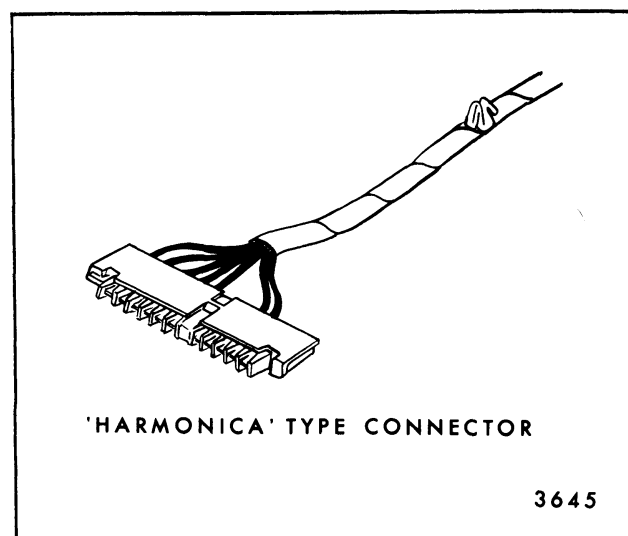


Fig. 10-1-Front Body Harness - Forward Connector



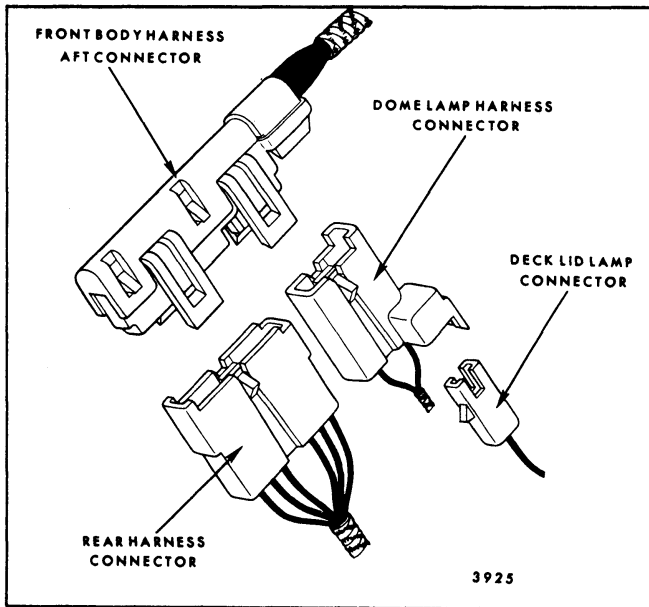


Fig. 10-2-Front Body Harness - Aft Connector - "F" Style Shown

Circuit wiring for power equipment is protected by a fuse panel mounted "plug-in" type protective circuit breaker.

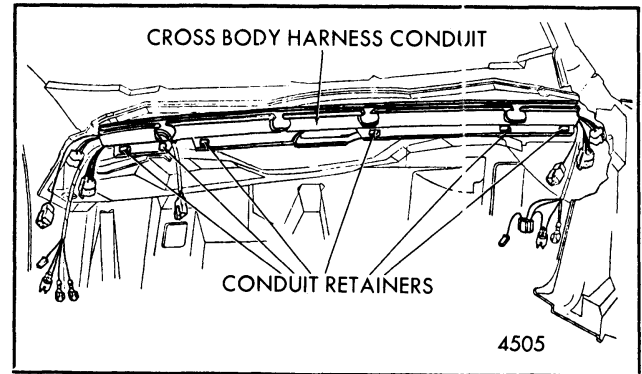


Fig. 10-3-Cross Body Harness Conduit

Typical body wiring diagrams are located at the end of this section. The Wire Identification Chart (Fig. 10-4) is applicable for all wiring diagrams unless otherwise specified.

The front body harness incorporates "harmonica" type connector at the front (Fig. 10-1) and a "block" type connector at the rear (Fig. 10-2). All wires crossing the body beneath the instrument panel are enclosed in a sturdy, one piece plastic cross body harness conduit, which is secured to the center duct panel with clips (Fig. 10-3).

## GENERAL CHECKING PROCEDURES

Generally most common failures are "open" or "short" circuits. An "open" circuit is one in which the circuit cannot be completed due to a broken wire, poor terminal contact or improper ground.

A "short" circuit consists of a feed circuit that has been shortened and completed to ground before it reaches the intended operating unit or a ground circuit that is grounding prematurely. A short in a feed circuit will usually create an overload and activate the circuit breaker or "blow" the fuse. A short in a ground circuit will cause continuous operation of the operating unit.

### DEFECTIVE COMPONENTS

Occasionally an "open" or "short" circuit exists within a circuit component, such as a motor, switch, relay, etc. These units can be checked by by-passing the suspected component.

#### 1. Checking an inoperative switch:

- A. Place a No.12 jumper wire on the switch terminal block between the center terminal (feed) and one of the two motor wire terminals. If the motor operates, the switch is defective. The principle involved here is to by-pass the suspected defective component and this procedure can be applied to check almost all component parts.

### OPEN CIRCUITS

1. Visually inspect wire for damage.
2. If wire damage is apparent, check wire on battery side of suspected area by grounding one end of a light tester and inserting pointed end through

CIRCUIT #	COLOR	CODE	DESCRIPTION	CIRCUIT #	COLOR	CODE	DESCRIPTION
2	Red	RED	To Battery Trailer Aux.	165	Brown	BRN	Window Control - L.F. - Down
8	Gray	GRA	Socket Windshield Washer Switch	166	Dark Blue-White	DRK BLU/WHT	Window Control - R.F. - Up
9	Brown	BRN	Tail, License and Marker Lamp	167	Brown-White	BRN/WHT	Window Control - R.F. - Down
18	Yellow	YEL	Stop and Direction Lamp or Direction Lamp Only - Rear L.H.	168	Dark Green	DRK GRN	Window Control - L.R. - Up
19	Dark Green	DRK GRN	Stop and Direction Lamp or Direction Lamp Only - Rear R.H.	169	Purple	PPL	Window Control - L.R. - Down
20	Red	RED	Stop R.H. Drive Canadian	170	Dark Green-White	DRK GRN/WHT	Window Control - R.R. - Up
24	Light Green	LGT GRN	Back-Up Lamp	171	Purple-White	PPL/WHT	Window Control - R.R. - Down
30	Tan	TAN	Fuel Gauge to Tank Unit	176	Dark Green	DRK GRN	Power Seat - Fore
31	Dark Blue	DRK BLU	Electric Fuel Pump	177	Yellow	YEL	Power Seat - Aft
32	Yellow	YEL	Feed, Mirror Lamp	178	Dark Green	DRK GRN	Power Seat - 6 - W - Fore and Up
39	Pink	PNK	Feed, Ignition Switch Controlled - Fuse Protected	179	Tan	TAN	Power Seat - 6 - W - Solenoid - Rear - Up and Down
40	Orange	ORN	Feed, Battery - Fuse Protected	180	Light Green	LGT GRN	Power Seat - 6 - W - Solenoid - Front - Up and Down
41	Orange	ORN	Feed, Indicator Light - Fuse Protected	181	Light Blue	LGT BLU	Power Seat - Solenoid - Fore and Aft
46	Dark Blue	DRK BLU	Rear Seat Speaker Feed from Radio	182	Yellow	YEL	Power Seat - 6 - W - Aft and Down
47	Dark Blue	DRK BLU	To Brakes Trailer Aux.	183	Light Blue	LGT BLU	Tailgate or Center Partition Window - Up
60	Orange - Black	ORN/BLK	Feed, Battery - Circuit Breaker Protected	184	Tan-White	TAN/WHT	Tailgate or Center Partition Window - Down
70	Red-White	RED/WHT	Feed, Relay Controlled Circuit - Circuit Breaker Protected	192	Purple	PPL	Defogger - High or Single Speed
90	Pink-Black	PNK/BLK	Feed - Cutout Switch Controlled - Circuit Breaker Protected	193	White-Orange & Purple	WHT/ORN/PPL	Defogger - Low Speed - .38 OHM/FT.
91	Black	BLK	Windshield Wiper - Low	194	Black	BLK	Electric Door Lock - Unlock
92	Light Blue	LGT BLU	Windshield Wiper - High	195	Dark Green	DRK GRN	Electric Door Lock - Lock
93	Yellow	YEL	Windshield Wiper Motor - Feed	201	Yellow	YEL	Comfort Control - Feed
94	Dark Blue	DRK BLU	Windshield Washer Switch to Windshield-Washer	202	Black-White	BLK/WHT	Compressor - Feed
125	Yellow	YEL	Door Jamb Switch	203	Red-White	RED/WHT	Potentiometer - Feed
126	Black	BLK	Seat Back Lock Solenoid	205	White-Black	WHT/BLK	Retractor
142	Black	BLK	Rear Compartment Lid Release - Feed	207	Yellow-Black	YEL/BLK	Retractor St.
150	Black	BLK	Ground Circuit - Direct	210	White	WHT	Front or Rear Edge Fwd and Down
151	Black	BLK	Ground Circuit - Direct	211	Dark Blue	DRK BLU	Front or Rear Edge Rwd and Up
152	Black	BLK	Ground Circuit - Direct	303	Red-White	RED/WHT	Feed - Electric Rear Seat Heater
153	Black	BLK	Ground Circuit - Direct	401	Black	BLK	Tailgate Release
154	Black	BLK	Ground Circuit - Direct	900	Blue	BLU	Monitoring Lamp
155	Black	BLK	Ground Circuit - Direct	909	Light Green-Black	LGT GRN/BLK	Sensor - Feed or Sensor - Ground
156	White	WHT		922	Brown	BRN	Rear Speaker - L.H. (Stereo)
157	White-Black	WHT/BLK	Ground Circuit - Switch Controlled	933	Black	BLK	Heated Back Glass - Left
158	White-Dark Green	WHT/DRK GRN	Body Interior Lamps	935	White	WHT	Heated Back Glass - Right
159	Black-Violet	BLK/VI	Ground - Ignition Key Warning Buzzer	941	Light Green	LGT GRN	Sun Roof
162	Gray	GRA	Power Top - Up	942	Black	BLK	Sun Roof
163	Purple	PPL	Power Top - Down	950	White	WHT	Ground Circuit
164	Dark Blue	DRK BLU	Window Control - L.F. - Up	977	Black	BLK	Speaker Ground
				978	Dark Blue	DRK BLU	Rear Speaker - R.H. (Stereo)

EXAMPLE:      CIRCUIT #      WIRE COLOR

                                 40      18      ORN

   WIRE GAUGE

4 9 2 6

Fig. 10-4-Wire Identification Chart

insulation. If tester lights, current is present.

Perform same operation on opposite side of suspected area. If tester does not light, break is between check points.

**NOTE:** To check for current between a switch and an operating unit, switch must be actuated to insure current in the wire. Also, be sure that light tester is operating properly before checking circuit. Touch one end of tester to negative terminal of battery and other end to positive terminal. If battery is not discharged and tester is working properly, tester will light.

3. If no wire damage is apparent, check for current in wire midway between power source and inoperative component with a light tester. If tester does not light, check wire at intervals in direction of power source. If tester does light, proceed with tester in opposite direction until the break is located.
4. Repair broken wire with suitable mechanical type connector or by soldering with rosin-core solder. Tape any exposed wire.

## IMPROPER GROUND

Many times perfectly sound operating units, such as motors, are considered defective and are replaced because an effective ground is not established. To check for proper ground, refer to the following:

1. Attach one end of a No.12 gauge jumper wire to body of inoperative unit.
2. Connect other end to a good ground, such as a bare metal panel.

**NOTE:** Due to various hinge construction, and possibility of heavy lubrication on door hinges, it may be advisable to ground door inner panel to the body proper when checking circuits in an open door.

3. Energize unit. If unit operates, original ground is defective.
4. Re-establish the ground.

## "SHORT" CIRCUITS

When a "short" exists in a given feed circuit, usually either the circuit breaker will be actuated or a fuse will be blown. However, if the "short" is located between a switch and an operating unit, the circuit breaker will not actuate or the fuse blow until the

switch is actuated. If the "short" occurs between the circuit breaker (or fuse) and the switch, the circuit will be inoperative all the time. Also, on circuit breaker protected feed circuits that are not ignition controlled, a "drain" on the battery will continue until the "short" is repaired or the battery runs down.

A short in a grounded circuit such as used in the seat belt warning system, will not cause the circuit to be inoperative. However, a short in a grounding circuit will cause continuous operation of the operating unit until corrected.

## Short Tester Checking Procedure

Locating a short circuit depends largely on the symptoms in any given case. As an aid in locating a "short" in any given feed circuit, an instrument known as a "short tester" (J-8681, BT-1120 or equivalent) may be employed. Its advantage lies in the fact that it is a labor saving device, since trim removal is NOT required prior to testing operations. All short testers have the following parts in common:

1. Two leads with alligator clips (for by-passing an existing circuit breaker or fuse).
2. A 10-15 amp circuit breaker (to replace the existing circuit breaker or fuse).
3. A meter for detecting intermittent electrical current.

The tester meter is designed to react to the magnetic lines of force that surround an energized wire or conductor. However, the current and magnetic lines of force must be interrupted, by means of the testing device circuit breaker, at intervals in order to cause the meter needle to deflect. The use of a "short" tester should include the following steps:

1. Reference should be made to service manual electrical diagrams in order to establish proper wire color identification.
2. Disconnect the affected circuit breaker (both wires) or remove blown fuse and substitute either of these items with the circuit breaker of the tester. This is accomplished by connecting the tester leads to the input and output side of the fuse clip or wires, previously removed from the existing circuit breaker.
3. The tester may respond immediately by making a snapping noise. (This sound may be accompanied by a warning light on some testers.) This response is an indication that the "short" is located in a FEED line, between the power

source and a switch. If the tester does not respond, proceed as follows:

- a. Turn on or actuate all switches in the inoperative circuit.
- b. Observe all lights or units affected by actuating all switches. The light or unit that **DOES NOT** operate intermittently, but causes the tester to react, is in the "shorted" circuit, and indicates the side of the car that is affected.

**NOTE:** The switch in the circuit being checked must be held in the closed position.

4. Beginning at the power source for the inoperative circuit, place the tester meter directly over the wire (or harness) with the meter arrows parallel to the wire(s) being checked. The meter needle will deflect noticeably each time the tester completes the circuit.

**NOTE:** Since this test will most often be made over intervening layers of trim material (cloth, rubber, plastic, metal), it may be necessary to move the meter laterally over the circuit at each check point to achieve the strongest signal on the meter.

5. Check progressively with the meter along the circuit from the power source to the inoperative unit. A sharp **DECREASE** in the **AMOUNT** of meter needle deflection will indicate the location (within 4-5 inches) of the "short". It must be remembered, however, that the above meter reaction would also occur if the wrong circuit was followed or the meter was not held directly above the circuit (reference "NOTE", in Step 4).
6. Once the location of the "short" is accurately established, necessary trim parts may be removed to perform repairs.

## POWER WINDOWS

### DESCRIPTION

The wiring harness for the electrically operated windows consists of the following major sections:

1. Cross-over or center harness. This harness is installed beneath the instrument panel and completes the circuit from the left door and power source to the right door windows on all styles.
2. Front door window harness. The impact bar and reinforcements incorporated into some door construction reduces accessibility for power window wiring harness. Therefore, if replacement of door harness should become necessary, attach a leader to the end of the harness before removal from the door. On "B-C-E and F" styles the harness is routed directly from the door hinge pillar entrance to the inboard side of the door inner panel and routed in the depressions provided.
3. Front door window control rear harness ("F" styles only). This harness is routed from the left shroud side panel along a recess in the left rocker inner panel. At a point opposite the drivers seat, the harness exits from the rocker and is routed below the seat to the center console at which point the single window switch is located. A front door opening carpet support covers the recess in the rocker panel while protecting and concealing the harness.

4. Feed harness to rear doors or quarter windows. On "A" styles this harness connects to the front cross-over harness on the left side of the shroud (fire wall) and extends rearward in the main body harness conduit under the driver's seat.

On 4-door styles, the harness exits from the conduit slightly rearward of the front seat and routes to each center pillar. On 2-door styles, the harness continues in the conduit to the rear seat back panel and routes along the lower edge of that panel to each quarter.

On "B-C-E" styles this harness is routed from the cross-over harness at the shroud side panel (right and left side similar) into the conduit that is secured to the inboard side of the rocker panel and exits at the center pillar or at the quarter panel. This harness terminates at the window motor and window switch.

5. Rear door or quarter window harness. On "A" styles the left and right rear door harness connects to the feed harness in the base of the center pillar. To disengage the connector, pull harness inboard at base of center pillar for accessibility.

Power windows are operated by a rectangular shaped 12 volt series-wound motor with an internal circuit breaker and a self- locking rubber coupled

gear drive. The harness to the door window motor connector is designed with a locking embossment to insure a positive connection. When disengaging the harness connector from the door motor, it is necessary to depress the thumb release. When installing the harness, the thumb release must be held depressed until the embossment on the female connector is locked in the hole of the motor connector.

All styles except Cadillac use a relay in the window circuit to prevent window operation until the ignition switch is turned "ON". The feed circuit for Cadillac is through the ignition switch.

The relay is located on the left shroud side panel for all styles except the "F" style which is located on the steering column lower support.

A junction block (Fig. 10-5) located on the reinforcement at the left shroud is used to supply current to power operated equipment circuits. Current is supplied to the junction block from the circuit breaker, and the power window harness plugs into the junction block.

All four button window control switches incorporate an elongated, positive locking, non-conductive stud. The switch is secured to the harness connector by a "Tinnerman" type nut (Fig. 10-6).

On Cadillac styles only, a two position ("Lock-Normal") window blockout (cutout) switch is installed on the left front door arm rest. This switch incorporates an elongated pin which protrudes through a hole provided in the harness connector back plate and a plastic coated, push on "Tinnerman" type nut is snapped over the pin.

The window blockout switch button should be left in the "NORMAL" position when ignition switch is

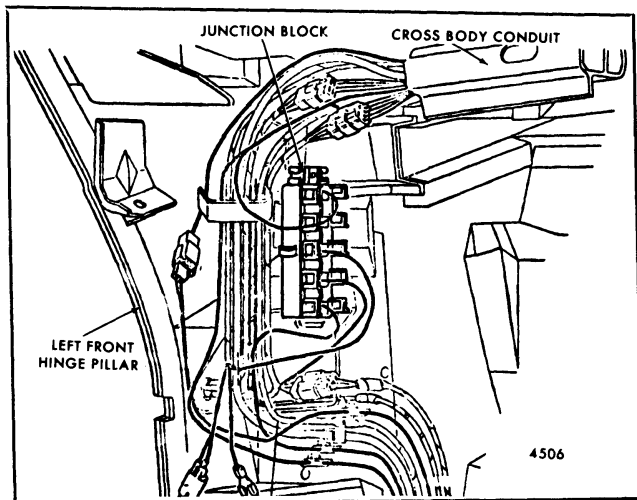


Fig. 10-5-Accessory Junction Block

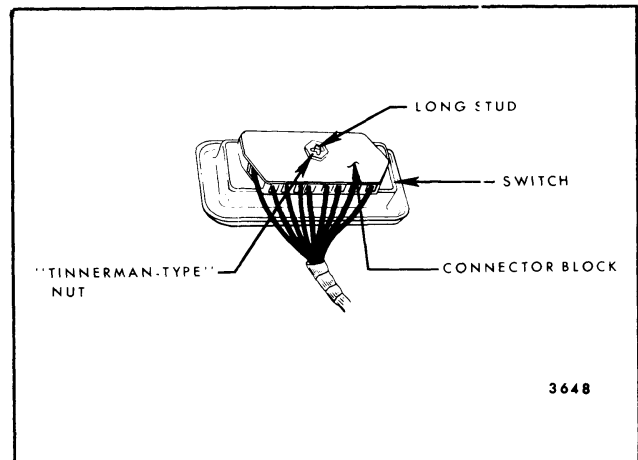


Fig. 10-6-Four Button-Trim Pad Switch-Arm Rest Switch Similar

"ON" to permit normal operation of power windows from all switch locations. If the control button is in the "LOCK" position with the ignition switch "ON", the windows will operate only from the master control switch.

## POWER WINDOW CIRCUIT CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams (Figs. 10-10, 10-11 and 10-12).

### Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was disconnected. If tester does not light, circuit breaker is inoperative.

### Checking Ignition Relay Assembly

1. With test light, check relay feed (orange/black

wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.

2. Turn ignition switch "ON" and with test light check output terminal of relay (red/white wire). If tester does not light;
  - a. Put test light on ignition relay coil terminal (pink or tan wire).
  - b. If tester lights, replace ignition relay.
  - c. If tester does not light, locate short or open circuit along pink or tan wire (check fuse at dash panel).

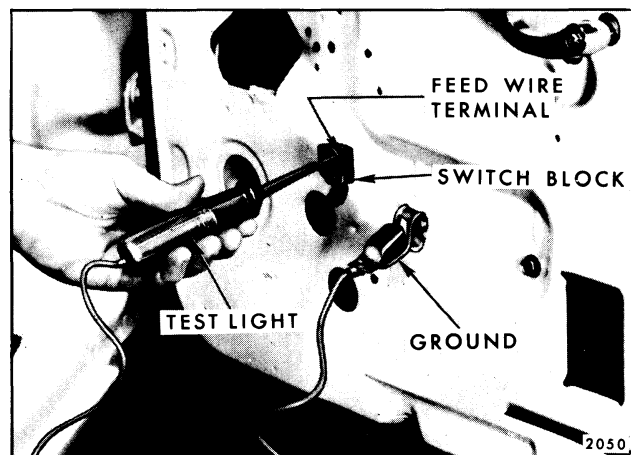


Fig. 10-7-Checking Feed Circuit

### Checking for Current at Master Window Control Switch

1. With ignition switch "ON", connect one test light lead to master window control switch feed terminal (red-white stripe) of switch block and ground other test lead.
2. If tester does not light, there is an open or short circuit between the relay and master control switch.
3. If tester does not light on Cadillac styles, check window blackout switch.

### Checking Window Blockout Switch-Cadillac Styles Only

1. With the ignition switch "ON", insert one end of a No. 12 gauge jumper wire into the terminal with the red-white stripe wire and the other end into the terminal with the pink-black stripe wire.
2. Operate control switches. If any of the windows operate with the jumper but not with the block-out switch, the switch is defective.

### Checking Feed Circuit Continuity at Window Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other tester lead to body metal (Fig. 10-7).
2. If tester does not light, there is an open or short circuit between switch and power source.

### Checking Window Control Switch

1. Insert one end of a No.12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block. Repeat this check on the remaining motor lead terminal (Fig. 10-8).
2. If the window operates with the jumper wire, but does not operate with the switch, the switch is defective.

### Checking Wires Between Door Window Switch and Door Window Motor

1. Disengage harness connector from window motor. The thumb release on the harness connector must be depressed before it can be disengaged from the motor.

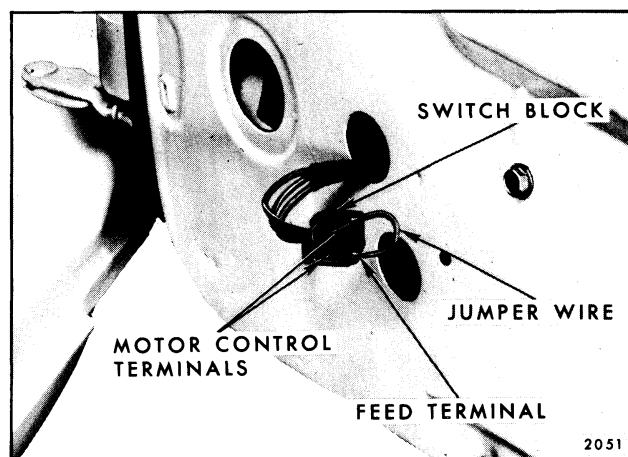


Fig. 10-8-Checking Window Control Switch

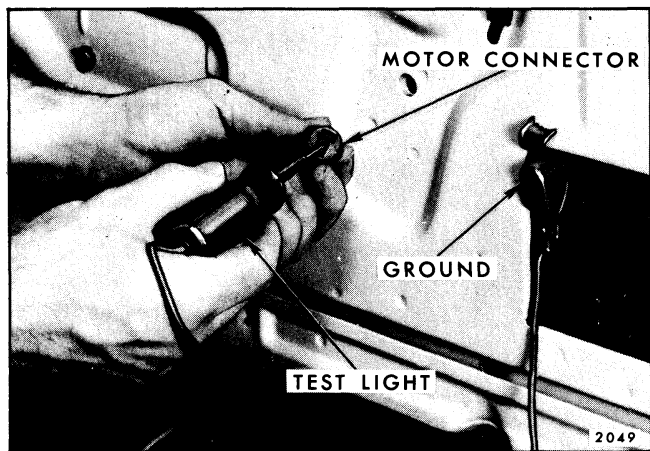


Fig. 10-9-Checking Circuit Between Switch and Motor

2. Insert one end of a No. 12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block (Fig. 10-8).
3. With test light, check for current at motor harness connector terminal being tested. If tester does not light, there is an open or short circuit in the harness between the control switch and motor connector (Fig. 10-9).
4. Check other terminal.

#### Checking Wires Between Quarter Window Switch and Quarter Window Motor

1. Insert one end of a No. 12 gauge jumper wire in the switch feed terminal and the other end in one

of the motor lead terminals of the switch block (Fig. 10-8).

2. With a test light, check for current at the corresponding terminal at the motor harness connector. If tester does not light, there is an open or short circuit between control switch and motor connector (Fig. 10-9).
3. Check other terminal.

#### Checking Window Motor

1. Check window regulator and channels for possible mechanical bind of window.
2. Check attachment of window motor to insure an effective ground.
3. Connect one end of a No. 12 gauge jumper wire to the power source and the other end to one of the terminals on the window motor.
4. Check the other motor terminal in the same manner. If the motor fails to operate with a jumper wire, the motor is defective and should be replaced.

#### Diagnosis Chart

The following typical conditions and corrections have been listed as an aid for eliminating electrical problems in the power window electrical circuit. It should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	APPARENT CAUSE	CORRECTION
1. None of the windows will operate with ignition switch "ON".	A. Short or open circuit in power feed circuit.	A. Check circuit breaker operation.  B. Check ignition relay operation. C. Check feed connection to power harness beneath instrument panel. D. Check feed circuit wires for possible short or open circuit. E. Check window blackout switch (Cadillac styles only).
	B. Defective window control switch ("F" style only).	A. Check window control console switch ("F" style only).

CONDITION	APPARENT CAUSE	CORRECTION
2. Right rear door window does not operate from master control switch on left door or from control switch on right rear door. Left door window operates.	<p>A. Short or open circuit between right rear door harness and lower window front harness.</p> <p>B. Short or open circuit in affected window control switch or window motor circuit.</p> <p>C. Possible mechanical failure or bind in window channels.</p> <p>D. Defective window motor.</p>	<p>A. Check harness connectors beneath outer end of instrument panel for proper installation.</p> <p>B. Check wires in power window front harness for possible short or open circuit.</p> <p>C. Check operation of rear door window control switch.</p> <p>D. Check circuit from window control switch to window motor for short or open circuit.</p> <p>E. Check window regulator and channels for possible mechanical failure or bind.</p> <p>F. Check operation of motor.</p>
3. Right door windows will operate from left door master control switch but will not operate from right door control switch. Left door windows operate.	A. Open or short circuit in front harness feed wire circuit.	A. Check feed wire in front harness for possible short or open circuit.

## POWER OPERATED STATION WAGON TAIL GATE WINDOW AND TAIL GATE - "B" STYLES

### ELECTRICAL TAIL GATE WINDOW CIRCUIT

#### Description

On all "B" styles, power operated tail gate windows are standard equipment. The window is controlled by a gear box-type regulator, a rectangular shaped 12 volt DC, reversible motor with an internal circuit breaker, guide cams and rollers, drive cable and lift spring. In addition to the internal circuit breaker in the motor, the wiring circuit is protected by a protective circuit breaker (refer to Electrical Section Description for location).

An ignition relay prevents operation of the tail gate window from the instrument panel switch, until the ignition switch is turned "ON". The external tail gate window control switch is mounted on the rear of the right quarter outer panel adjacent to the tail gate. On styles equipped with a power operated tail gate, the switch controls both the gate and glass.

On styles equipped with a manually operated tail gate, the switch includes a link to the gate lock lever. Turning the key clockwise will open the tail gate window. After the window is open approximately eight inches, the knob can be turned to unlock the tail gate. The window can not be fully closed until the tail gate is fully closed.



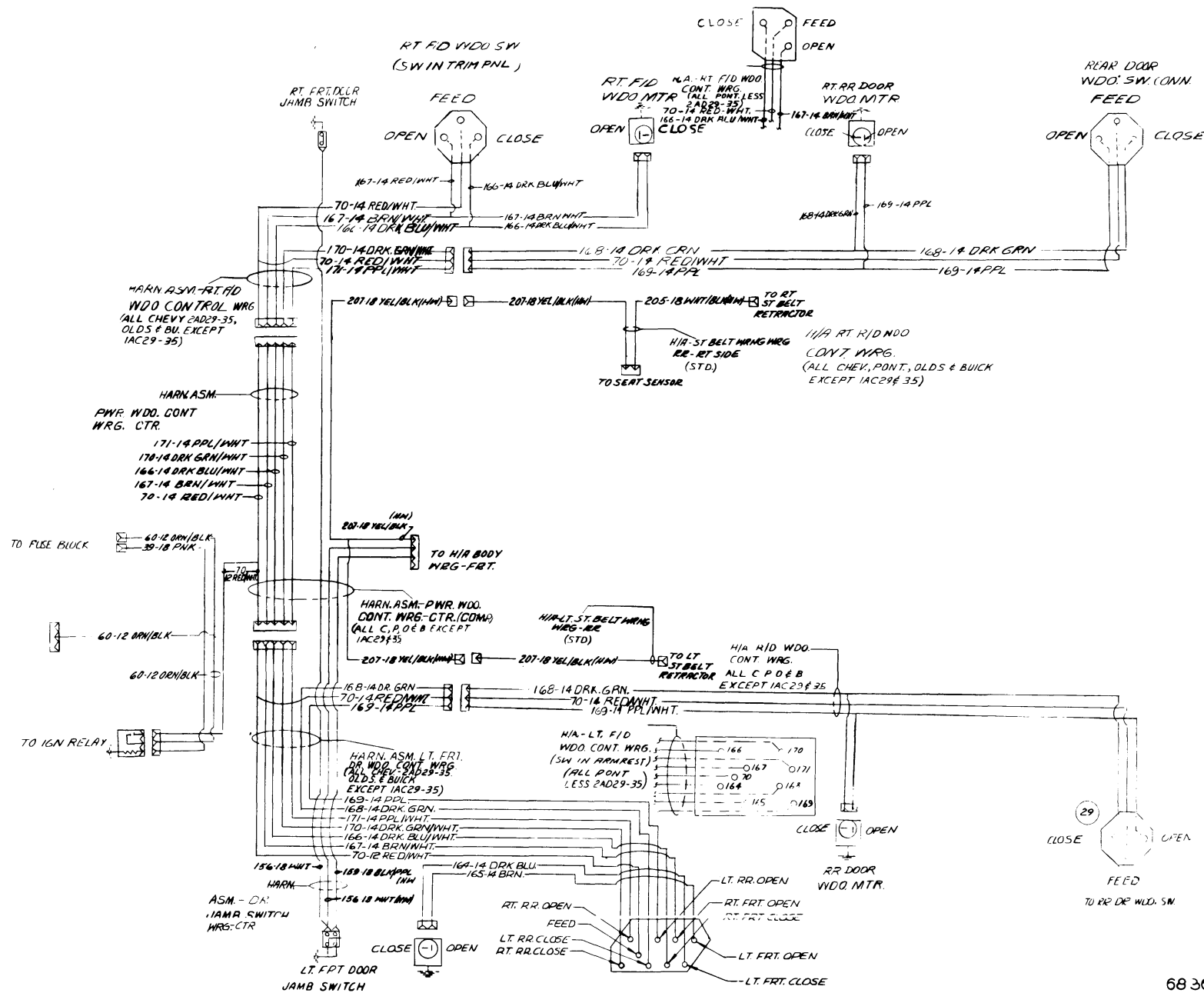


Fig. 10-10-Two-Door and Four-Door Power Window Circuit Diagram - "A" Styles

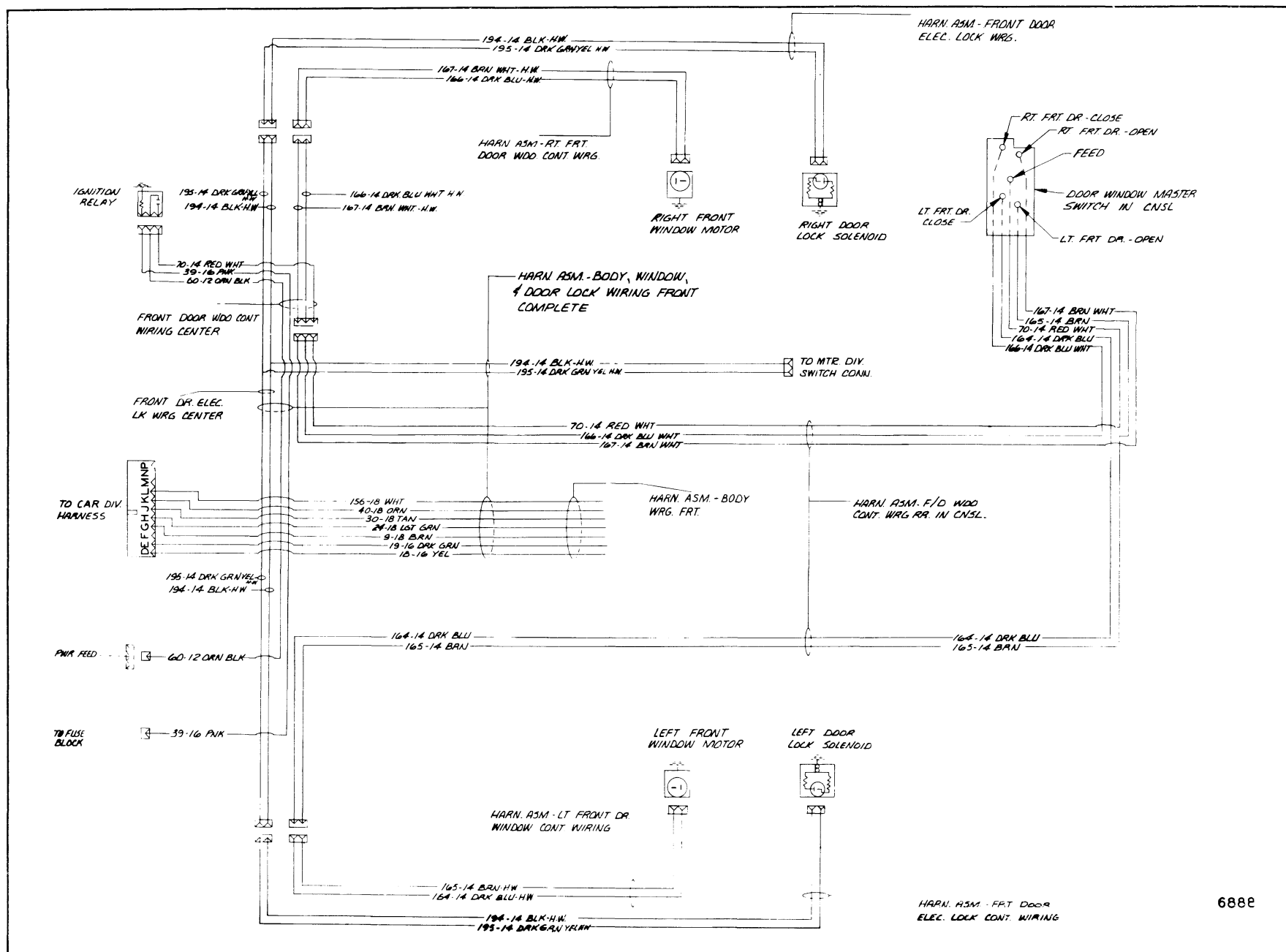


Fig. 10-11-Power Window Circuit Diagram - Pontiac "F" Style

Fig. 10-12-Two-Door and Four-Door Power Window Circuit Diagram - "B-C-E" Styles (Switch in Arm Rest)

On styles equipped with a power operated tail gate, the switch includes three detent positions in each of the clockwise and counterclockwise directions. Turning the key clockwise to the first detent position will open the tail gate window. The second detent position will open the tail gate, and the third detent position will provide simultaneous opening of the tail gate and tail gate window. Turning the key counterclockwise to the first detent position will close the tail gate window, the second detent position will close the tail gate and the third detent will close both simultaneously.

## ELECTRICAL TAIL GATE CIRCUIT

### Description

The power operated tail gate is controlled by a lift arm hinge and regulator assembly, equipped with a rectangular shaped, 12 volt DC, reversible direction motor with an internal circuit breaker.

In addition to the circuit breaker in the motor, the wiring circuit is protected by a protective circuit breaker (refer to Electrical Section Description for locations).

Power operated tail gates can be controlled by an instrument panel mounted switch (except Chevrolet) or a key operated switch located at the rear of the right quarter outer panel adjacent to the tail gate. The key operated switch controls both the tail gate and tail gate window. Operation of the switch is described under Electrical Tail Gate Window Circuit.

On all styles, the tail gate can be operated from the instrument panel control switch when the ignition switch is turned "ON" and the transmission is in "PARK" or "NEUTRAL".

The tail gate window and tail gate harness is enclosed in the body wire harness conduit and consists of two sections. The front section extends to the rear of the left wheelhouse just below the left quarter window (rear harness connectors are located here).

The rear harness is routed along the rear cross bar panel to the tail gate window motor and switch at the right back opening lock pillar, and to the tail gate motor mounted on the rear of the left quarter inner panel.

**NOTE:** Should replacement of front harness become necessary, access to front and rear harness connector may be gained by removing the left rear quarter trim pad. A leader should be secured to the end of the harness to aid in installation of replacement harness.

## CHECKING PROCEDURE - TAIL GATE WINDOW AND TAIL GATE

Before performing an intensive checking procedure to determine any failure of the circuit, check all the connectors for proper installation. The checking procedures may be used to check the operation of a switch or motor after the cause of the electrical failure has been isolated to a particular part of the circuit. Refer to the circuit diagrams of this section (Figs. 10-13 thru 10-31 A ).

### Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, connect one test light lead to the output terminal and ground other lead. If tester does not light, circuit breaker is inoperative.

### Checking Relay Assembly

1. With test light check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.
2. Turn ignition switch "ON" and with test light check output terminal of relay (red/white wire). If tester does not light, put test light on relay coil feed (tan or pink wire) and if lamp lights, replace relay. If tester does not light locate open or short in pink or tan wire (check fuse if shorted).

### Checking Feed Circuit Continuity at Control Switch on Instrument Panel

1. Turn ignition switch "ON" and disengage harness connector from switch. Connect one test light lead to feed terminal of switch connector and ground other test lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.

### Checking Control Switch at Instrument Panel

1. Turn ignition switch "ON" and disengage harness connector from switch.
2. Use a No. 12 gauge jumper wire and insert one end into feed terminal and other end into one of the other terminals. Tail gate window motor should operate.
3. Repeat procedure for other terminal. If tail gate window motor operates with jumper wire but does not operate with control switch, switch is defective.

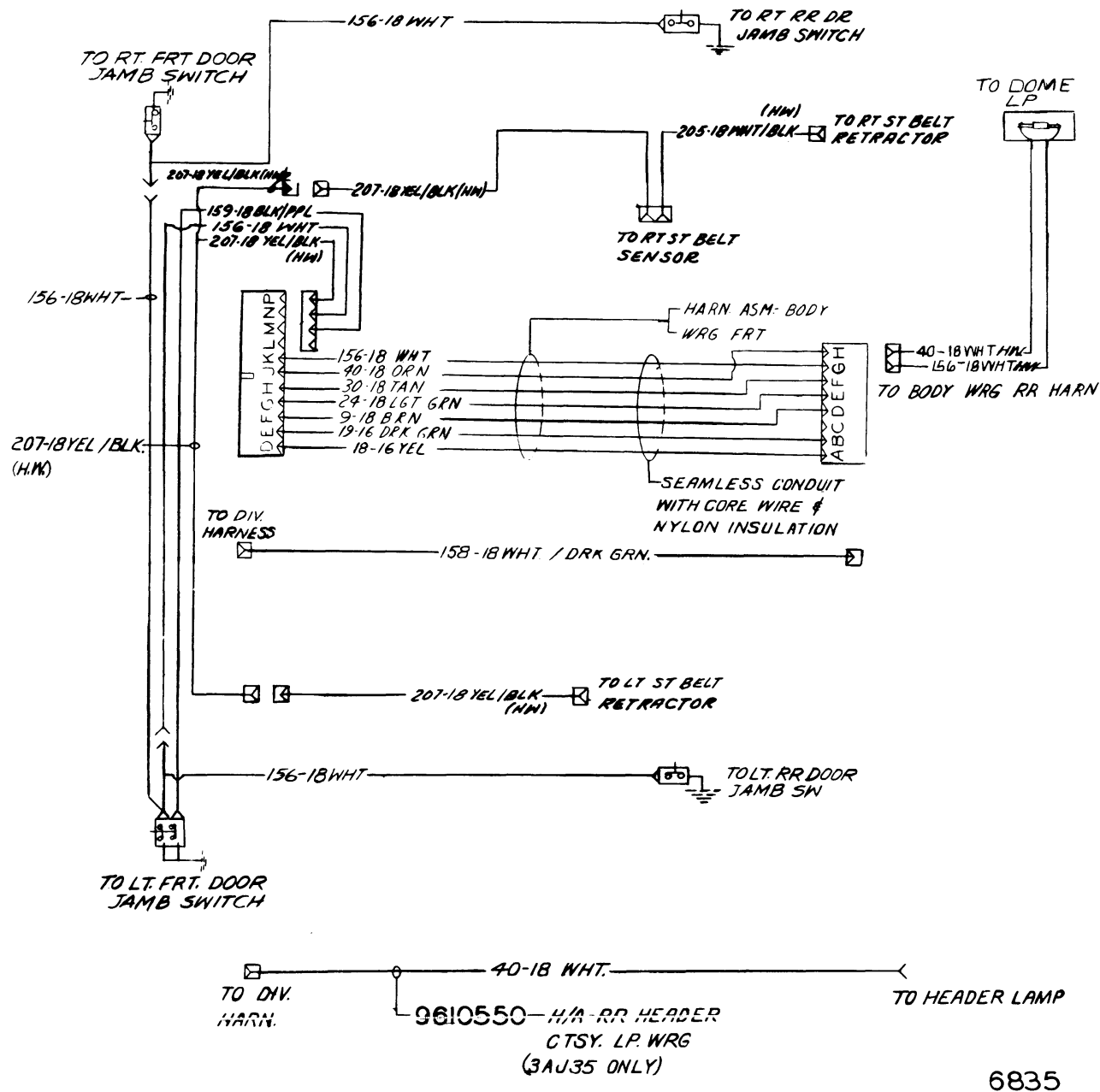
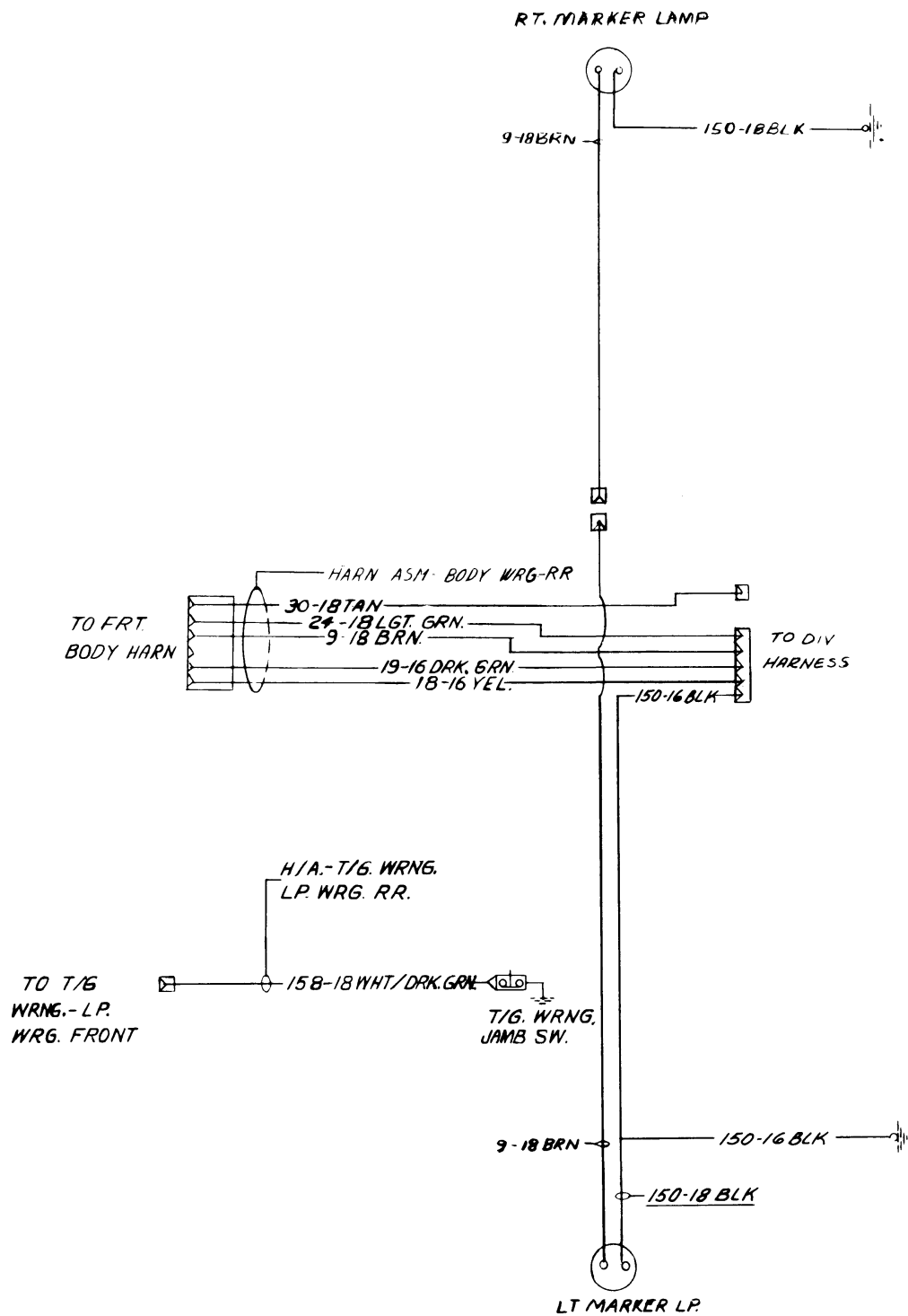
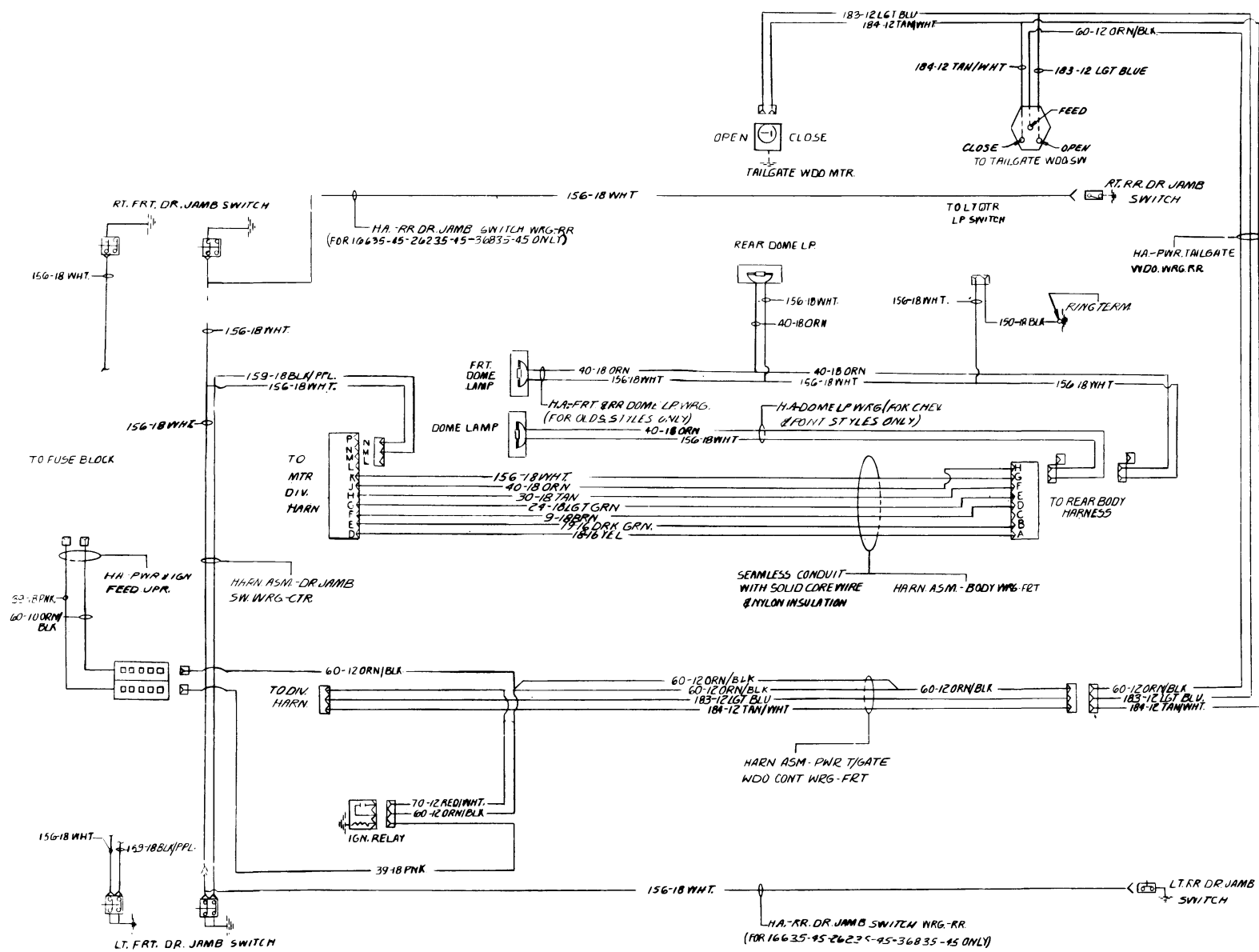


Fig. 10-13-Front Harness Circuit Diagram - Chevrolet "A-35" Style

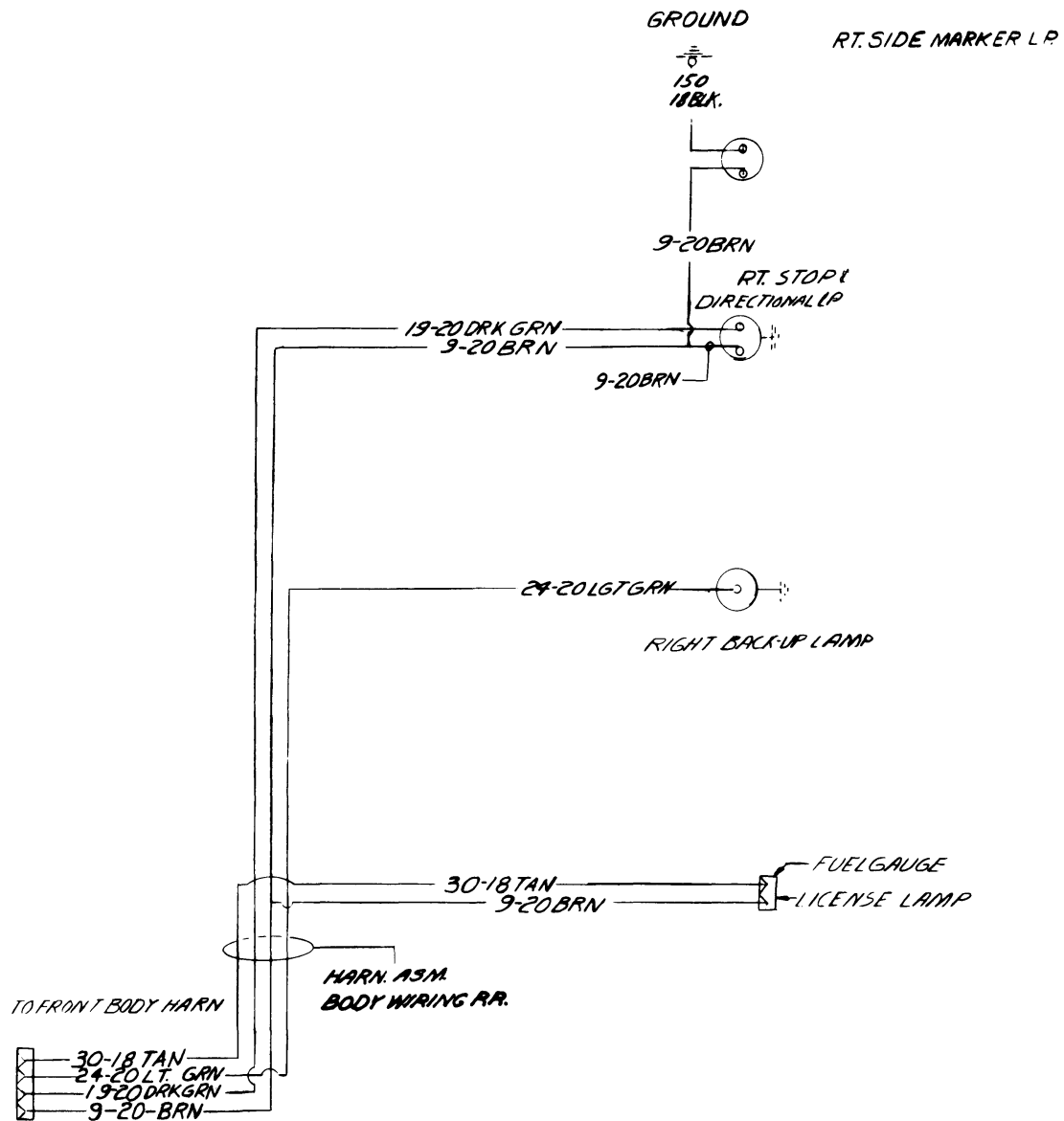


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Fig. 10-14-Rear Harness Circuit Diagram - Chevrolet "A-35" Style



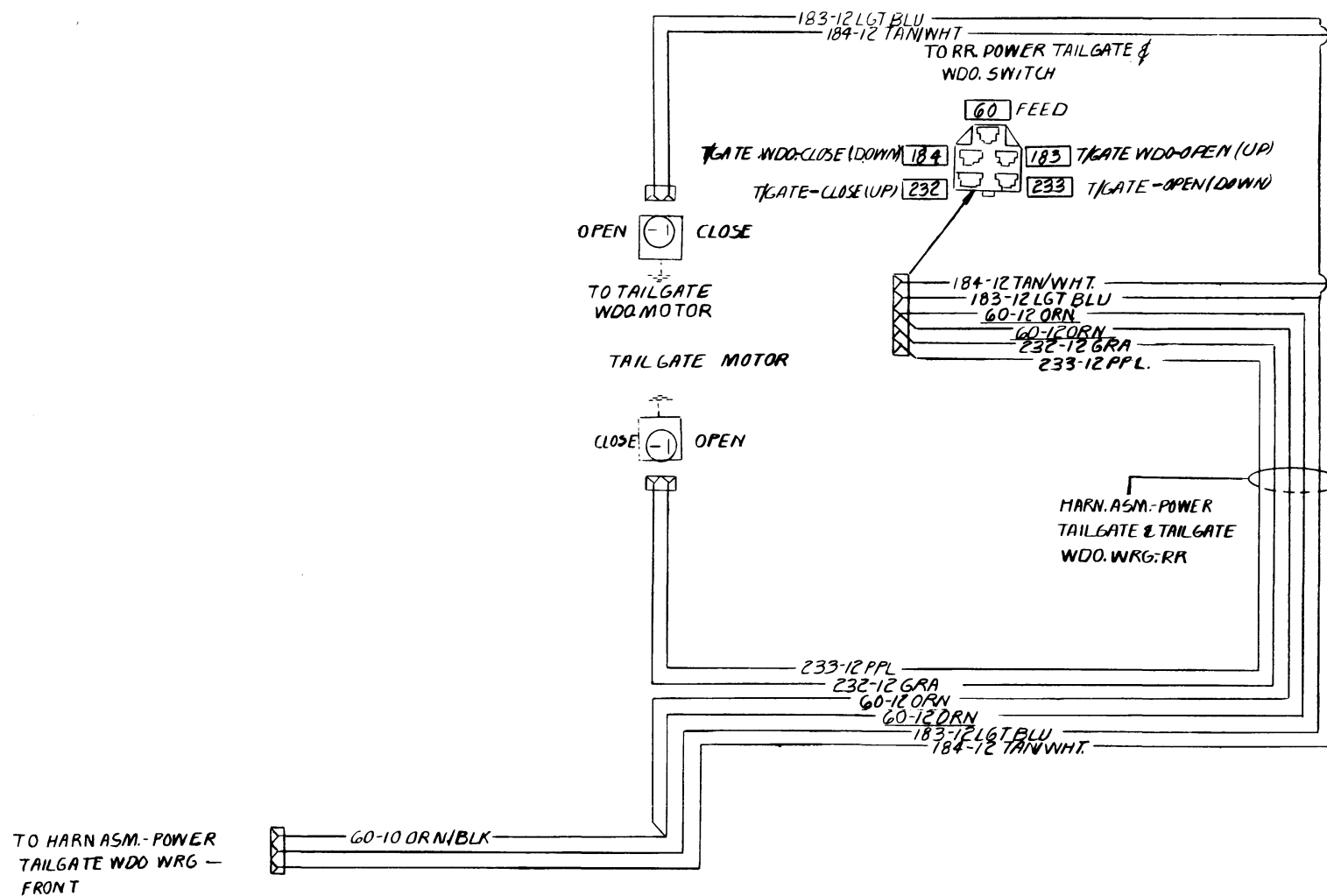
**Fig. 10-15-Front Harness Circuit Diagram - Chevrolet "B-35-45" Styles**



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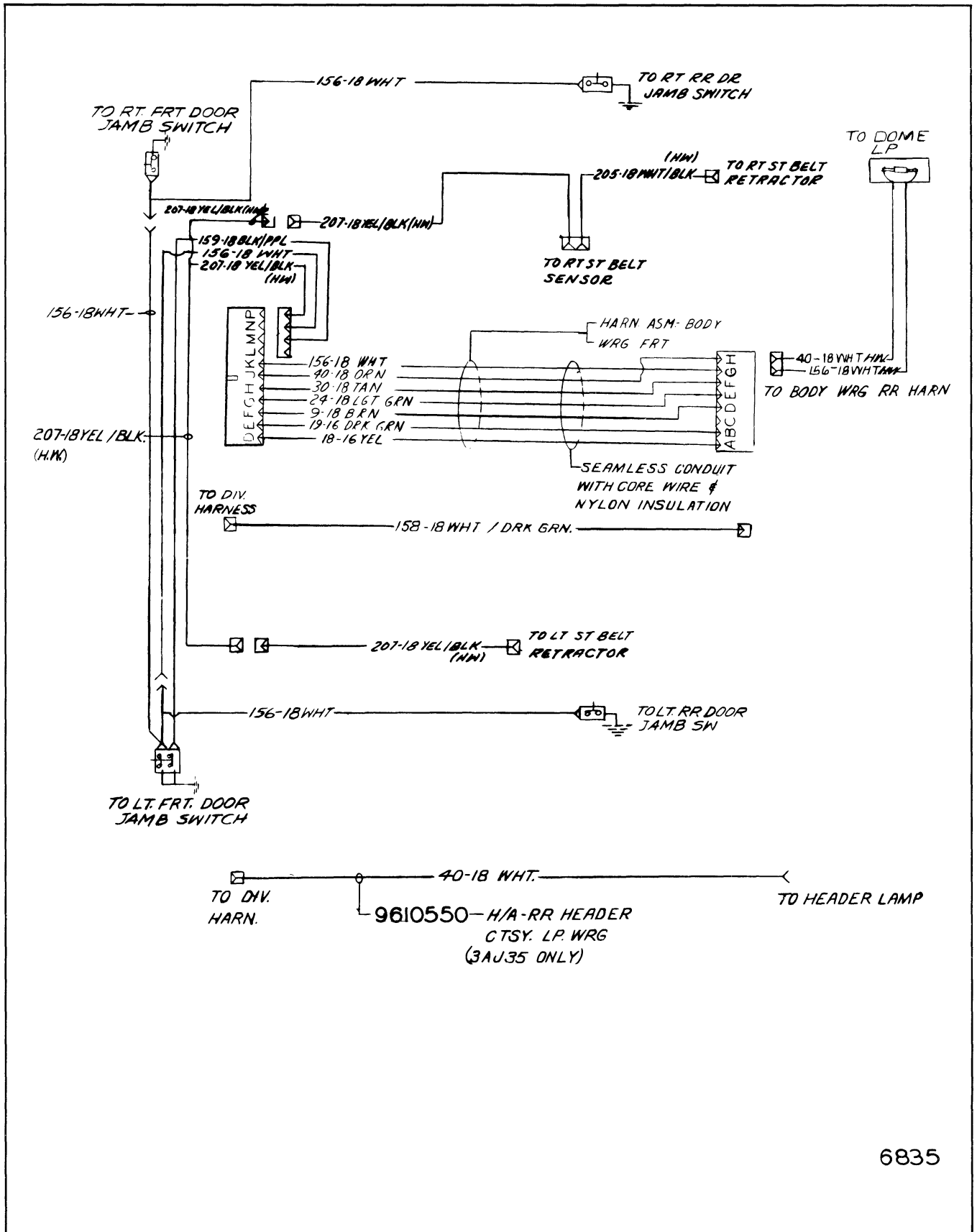
Fig. 10-16-Rear Harness Circuit Diagram - Chevrolet "B-35-45" Styles





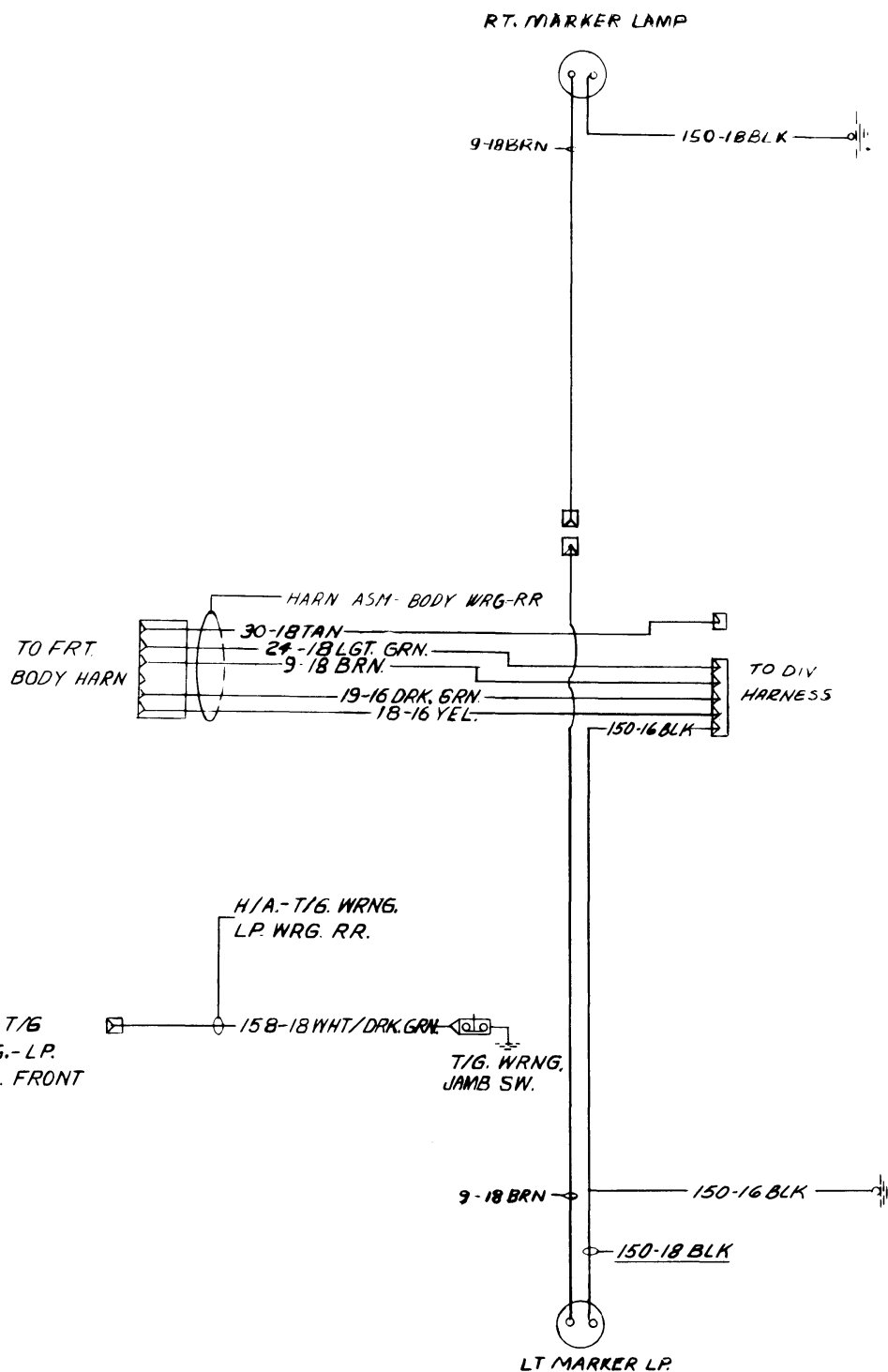
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Fig. 10-17-Rear Tail Gate and Tail Gate Window Circuit Diagram - Chevrolet "B-35-45" Styles



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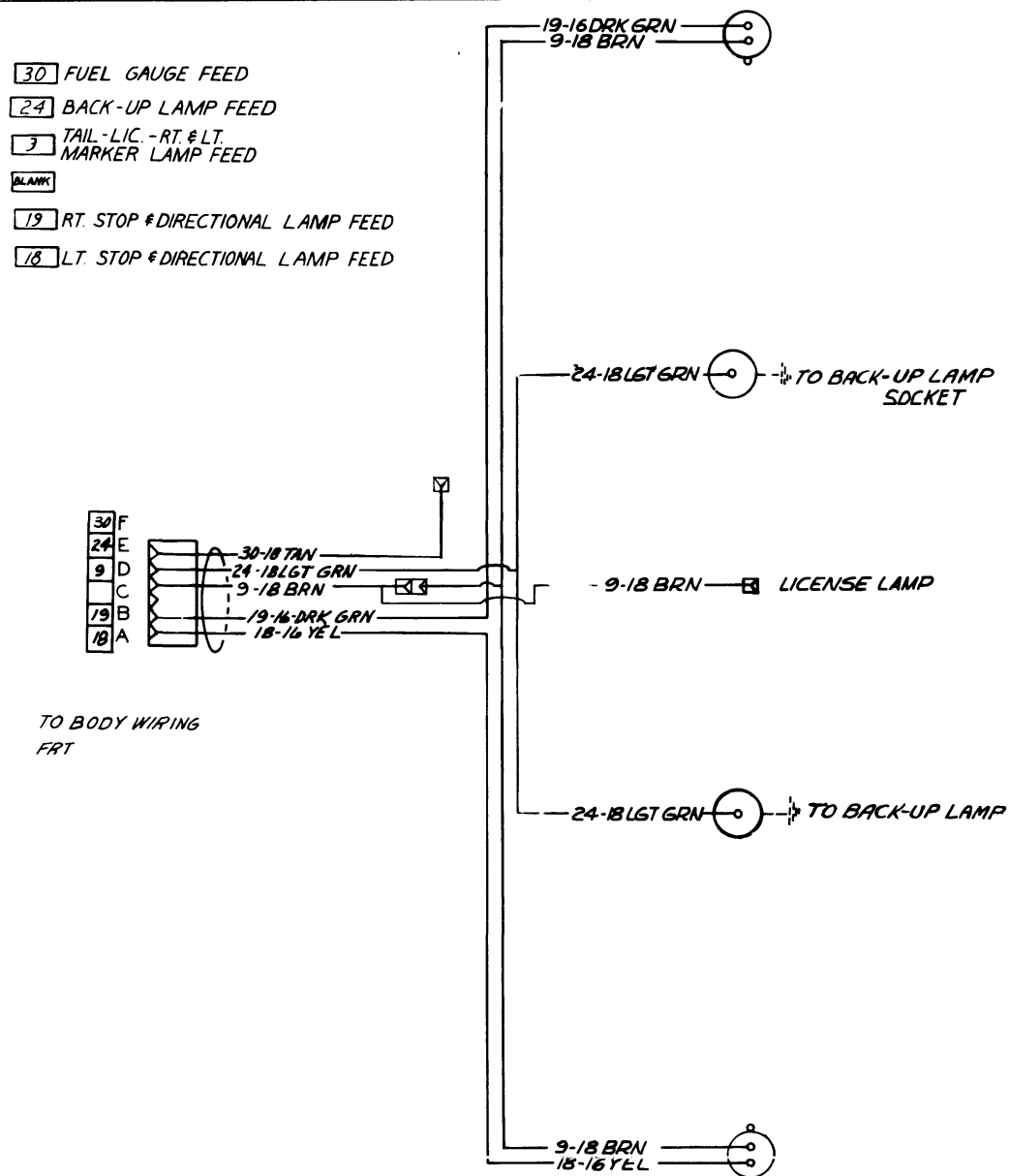
Fig. 10-18-Front Harness Circuit Diagram - Pontiac "A-35" Style



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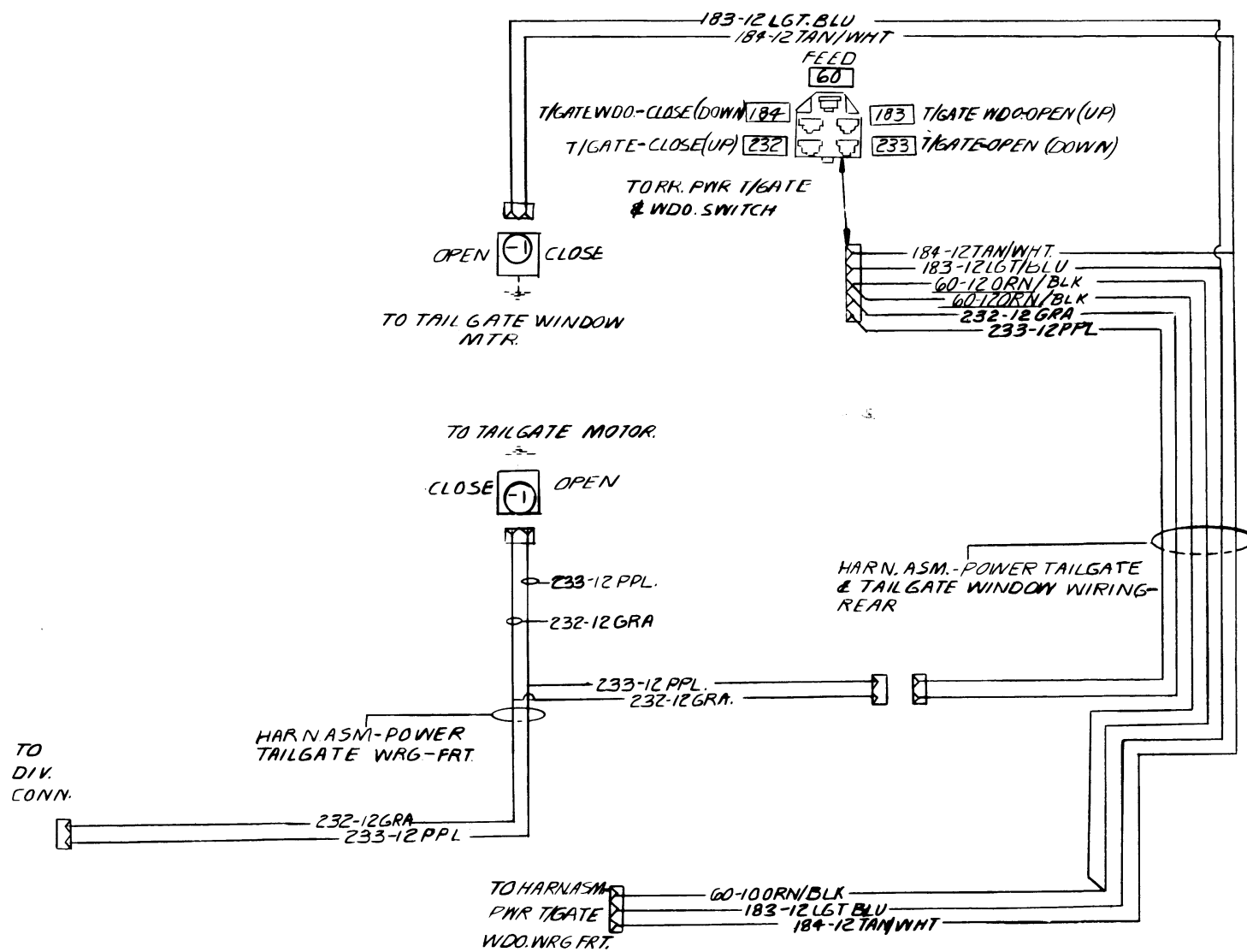
Fig. 10-19-Rear Harness Circuit Diagram - Pontiac "A-35" Style





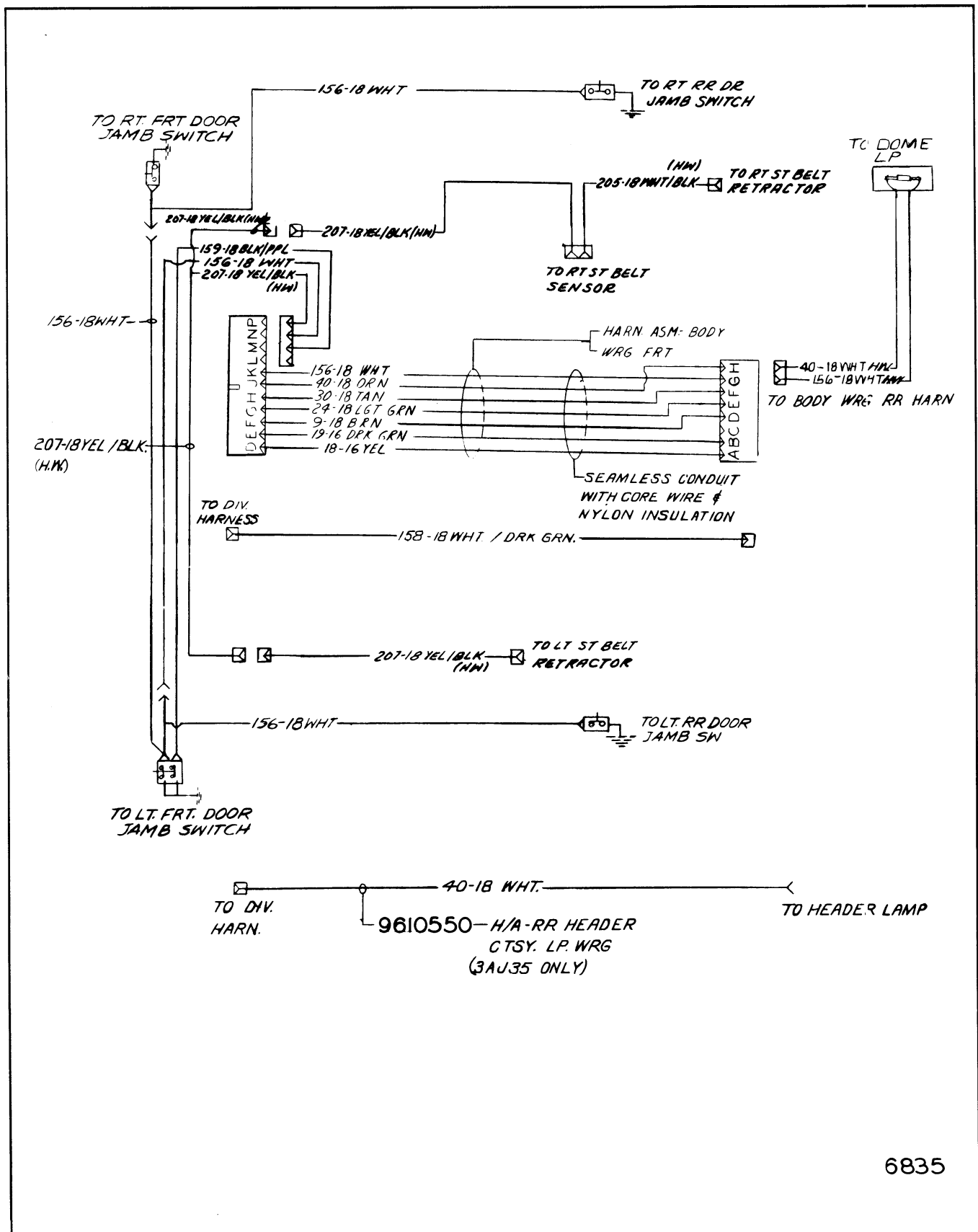
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Fig. 10-21-Rear Harness Circuit Diagram - Pontiac "B-35-45" Styles



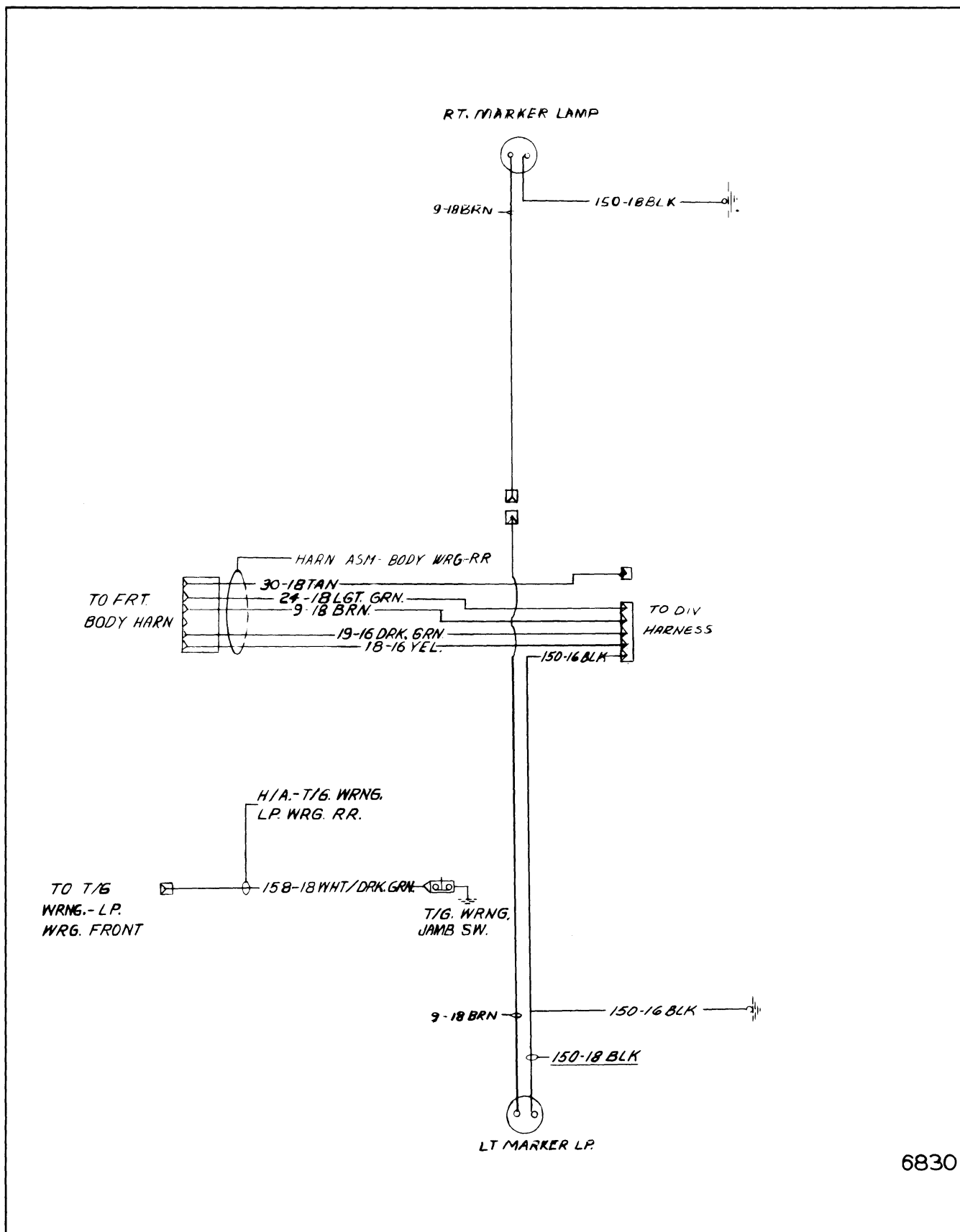
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Fig. 10-22-Rear Tail Gate and Tail Gate Window Circuit Diagram - Pontiac "B-35-45" Styles



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Fig. 10-23-Front Harness Circuit Diagram - Oldsmobile "A-35" Style

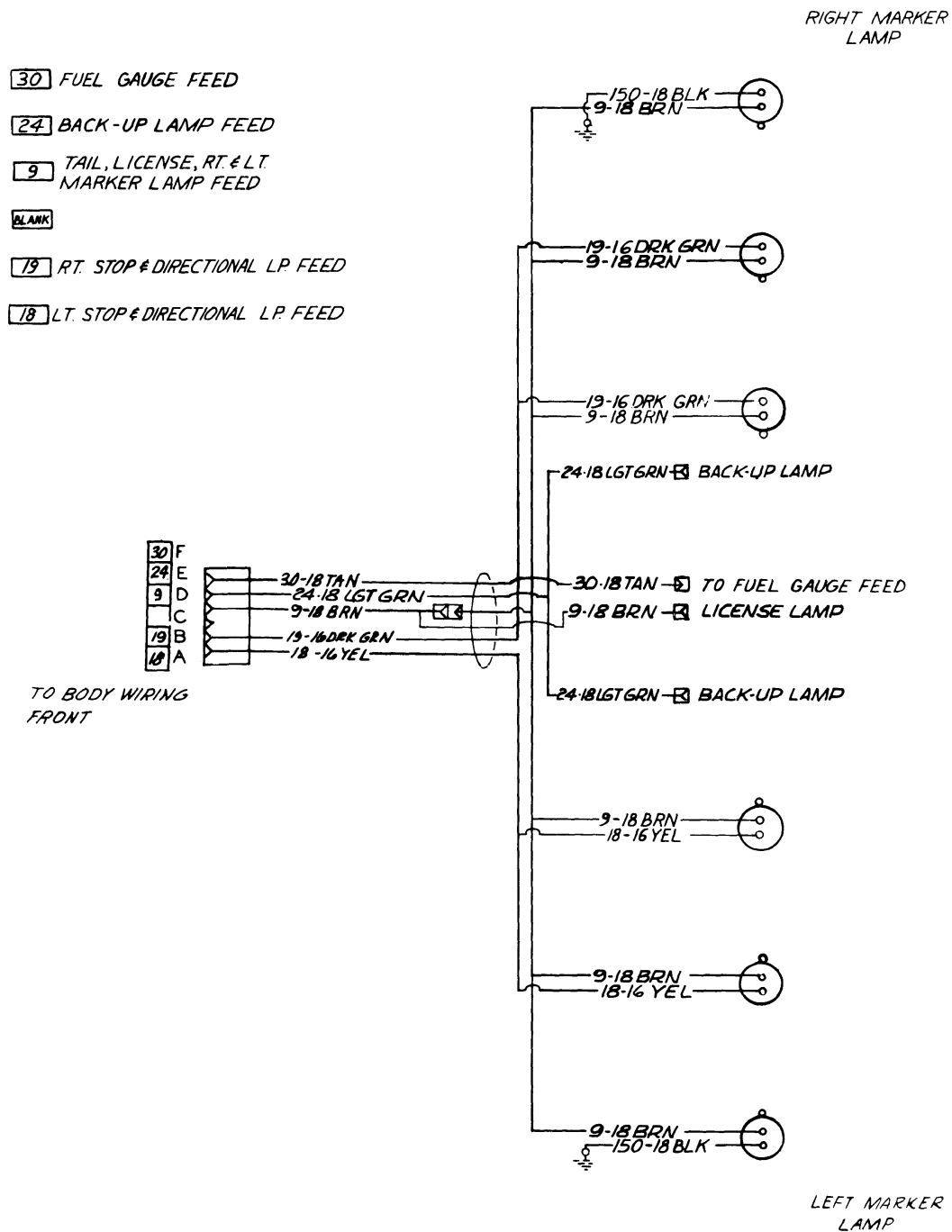


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Fig. 10-24-Rear Harness Circuit Diagram - Oldsmobile "A-35" Style

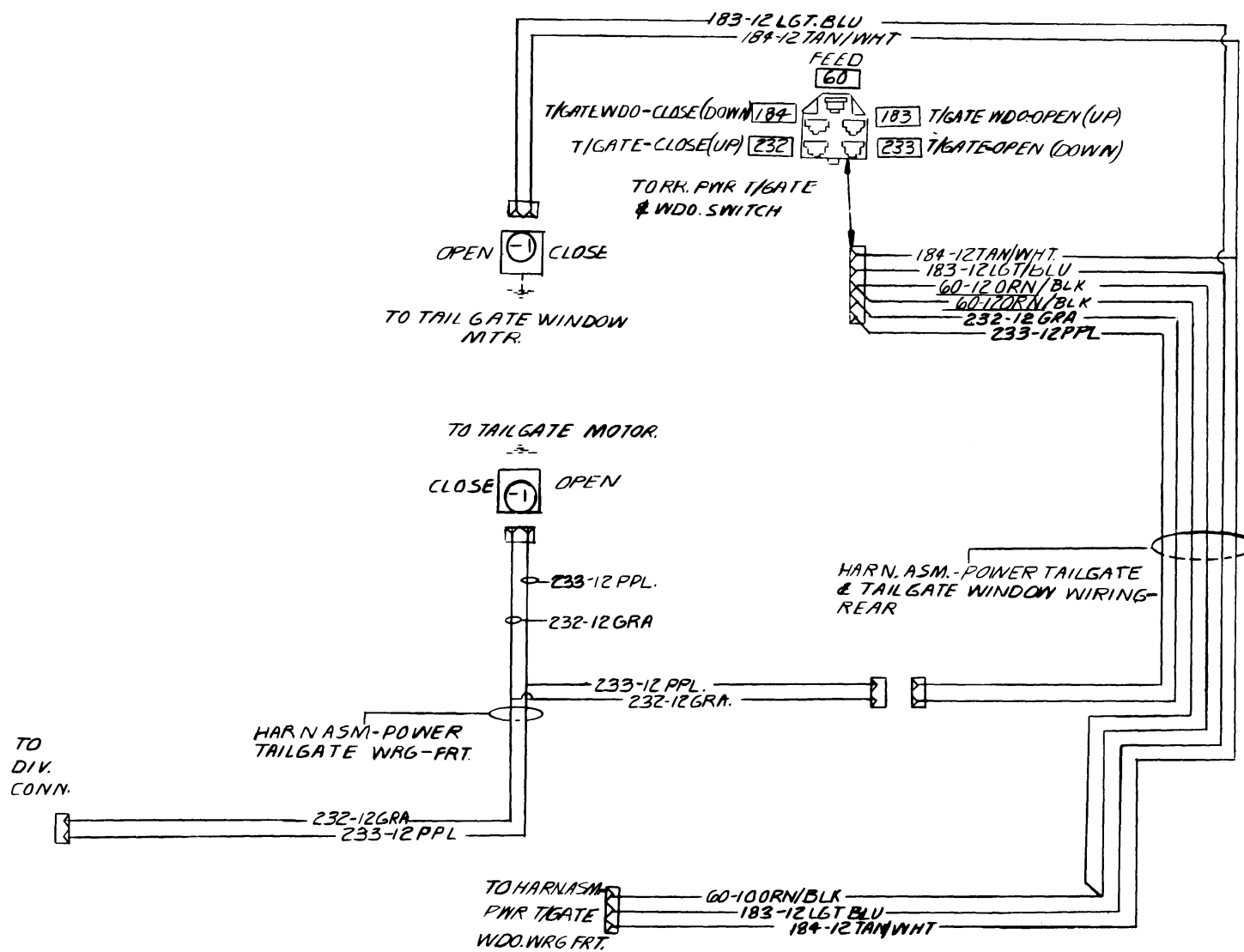


Fig. 10-25-Front Harness Circuit Diagram - Oldsmobile "B-35-45" Styles



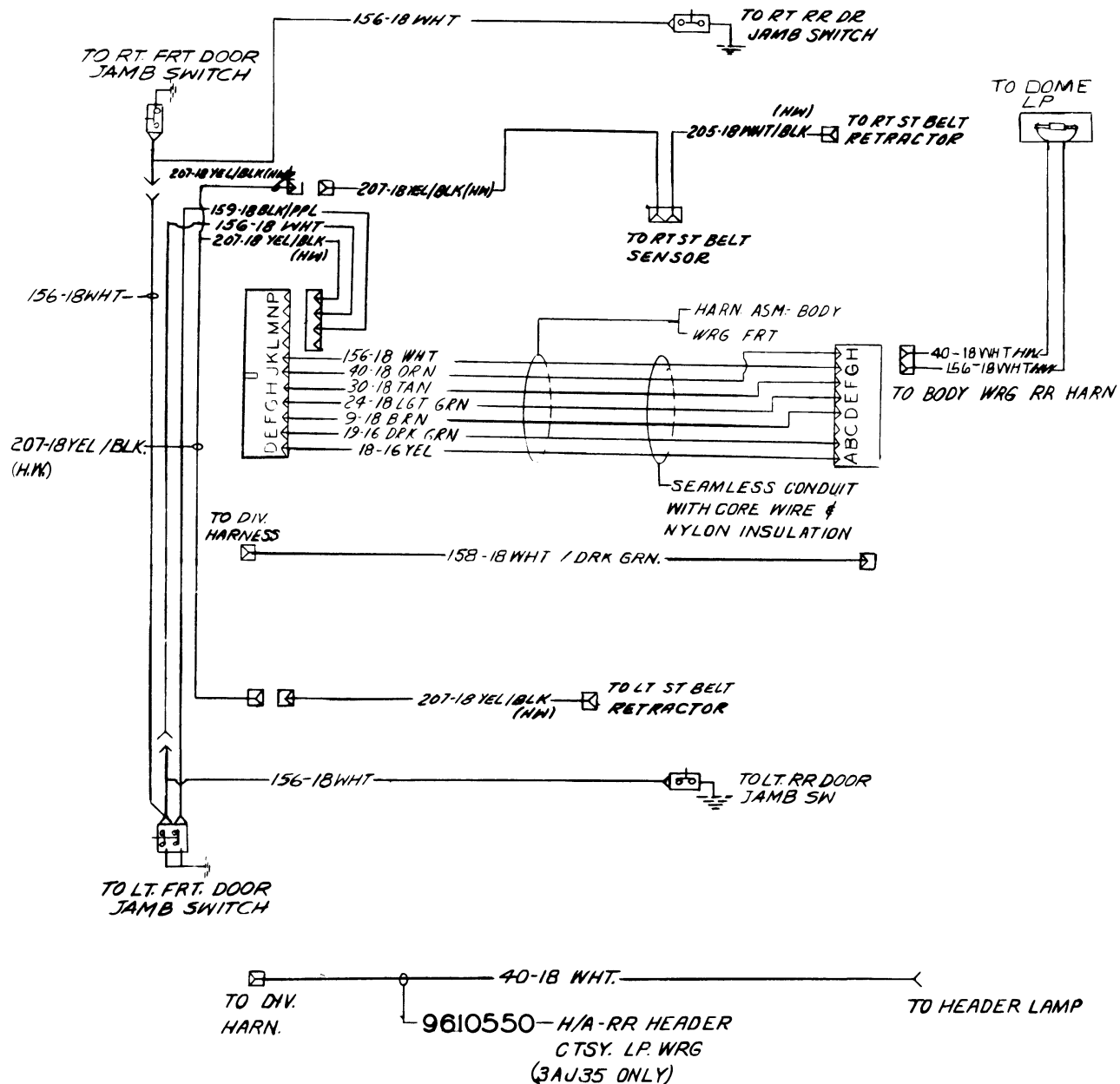
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Fig. 10-26-Rear Harness Circuit Diagram - Oldsmobile "B-35-45" Styles

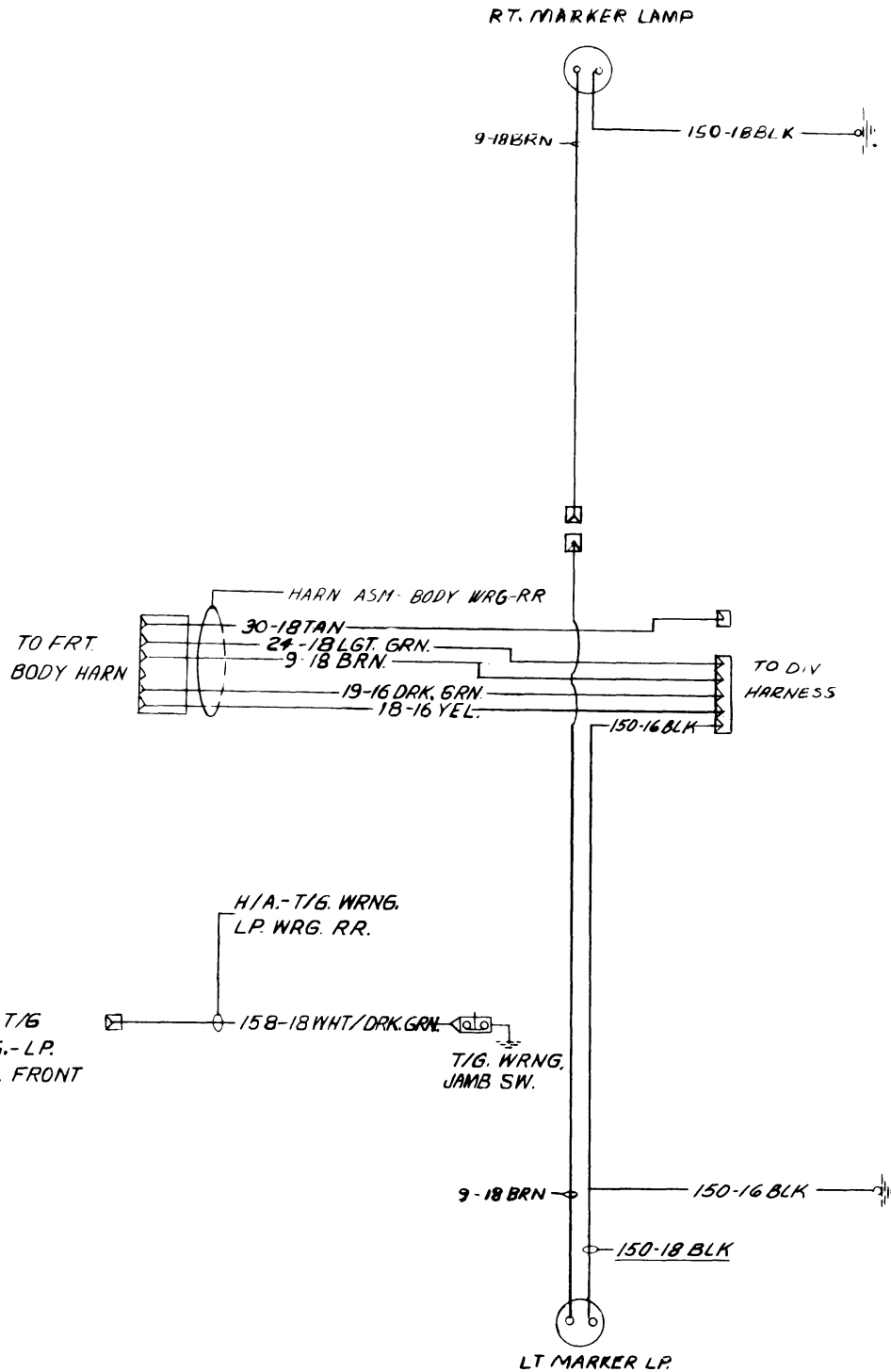


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Fig. 10-27-Rear Tail Gate and Tail Gate Window Circuit Diagram - Oldsmobile "B-35-45" Styles



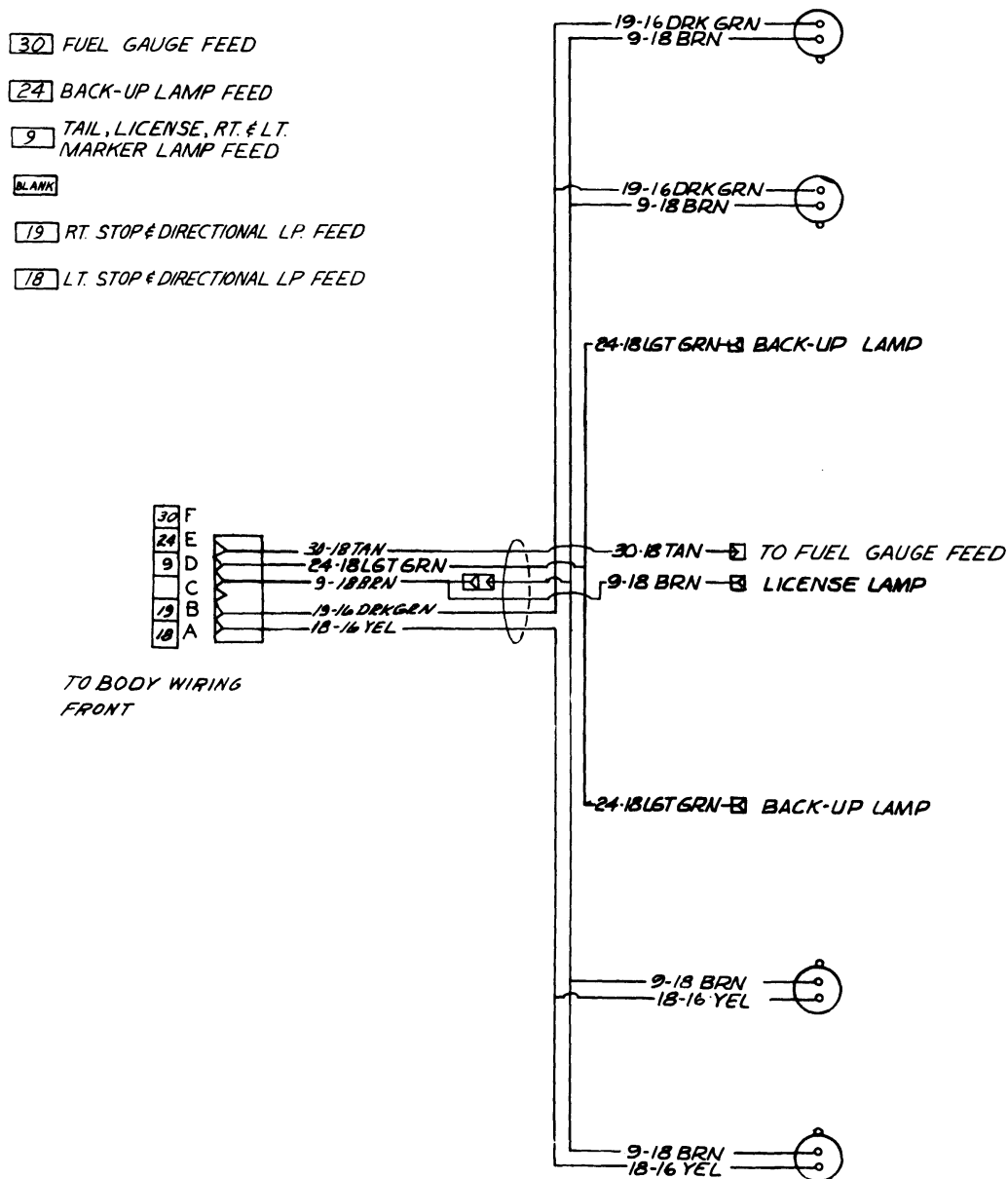
**Fig. 10-28-Front Harness Circuit Diagram - Buick "A-35" Style**



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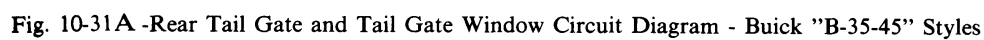
Fig. 10-29-Rear Harness Circuit Diagram - Buick "A-35" Style





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Fig. 10-31-Rear Harness Circuit Diagram - Buick "B-35-45" Styles





### Checking Key Operated Window Control Switch on Right Quarter Panel

1. Remove key switch assembly as indicated in Tail Gate Section of this manual.
2. Disengage connector block from key switch assembly.
3. Use a test light to determine if current is present at feed terminal.
4. Apply procedure outlined in checking instrument panel switch to determine if switch is defective.

### Checking Key Operated Window and Tail Gate Control Switch on Right Quarter Panel

1. Remove key switch assembly as indicated in Tail Gate Section of this manual.
2. Disengage connector block from switch assembly.
3. Use a test light to determine if current is present at feed terminal.  
with switch, switch is defective.
4. Use a No. 12 gauge jumper wire and insert one end into feed terminal of connector and other end

into one of terminals to the tail gate window motor. Tail gate window motor should operate.

5. Repeat procedure for other tail gate window terminal. If tail gate window motor operates with jumper wire but does not operate with control switch, switch is defective.
6. Repeat Steps 4 and 5 inserting the jumper wire into feed terminal and terminals to tail gate motor. If tail gate motor operates with jumper wire but does not operate with control switch, switch is defective.

If tail gate window and tail gate motors operated in Steps 4, 5 and 6 but will not operate simultaneously

### Checking Tail Gate Window and Tail Gate Motor

1. Disconnect harness connector from motor.
2. Connect positive side of power source to one of motor terminals and negative side to body metal. Motor should operate. To check reverse operation of motor, connect power source to other motor terminal. If motor does not operate in both directions replace motor.
3. On tail gate window motor, use same checking procedure explained for tail gate motor.

**DIAGNOSIS CHART - TAIL GATE WINDOW AND TAIL GATE**

CONDITION	APPARENT CAUSE	CORRECTION
1. Tail gate window opens and closes from quarter outer panel switch, but does not operate from instrument panel switch.	A. Open or short circuit from power source to instrument panel control switch.  B. Defective or inoperative control switch.	A. Check affected wiring and/or ignition relay.  B. Check operation of switch.
2. Tail gate window, or tail gate, will not operate up or down from any of the control switches.	A. Open or short circuit from power source to switches or motor.  B. Motor not connected or poorly grounded.  C. Mechanical bind or failure in tail gate window, or tail gate mechanism.  D. Defective tail gate window, or tail gate motor.	A. Check operation of circuit breaker; check affected circuit for open or short circuit.  B. Check connectors to motor for proper engagement.  C. Check mechanical parts for bind or failure.  D. Check operation of motor.

## POWER SEATS

### HORIZONTAL SEATS

#### Description

The seat adjusters are actuated by a 12 volt series-wound motor located near the front left side of the seat bottom frame, and is energized through a control switch installed in the seat side panel or in the door arm rest.

For circuit diagram see Figure 10-32.

The horizontal seat circuit is protected by a circuit breaker (refer to Electrical Section Description for specific location).

A junction block (Fig. 10-33) located on the reinforcement at the left shroud is used to supply current to the power operated seat circuit. Current is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

The trouble diagnosis chart will help locate typical problems which may occur.

### SIX-WAY SEATS

#### Description

The seat adjusters for the 6-way seats are actuated by a 12- volt motor installed at the left side of the seat assembly.

The motor is energized by a three button-type control switch located in the left seat side panel or in the left front door arm rest.

The power seat circuit is protected by a circuit breaker (refer to Electrical Section Description for location).

A junction block (Fig. 10-33) located on the reinforcement at the left shroud is used to supply current to the power operated seat circuit. Current is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

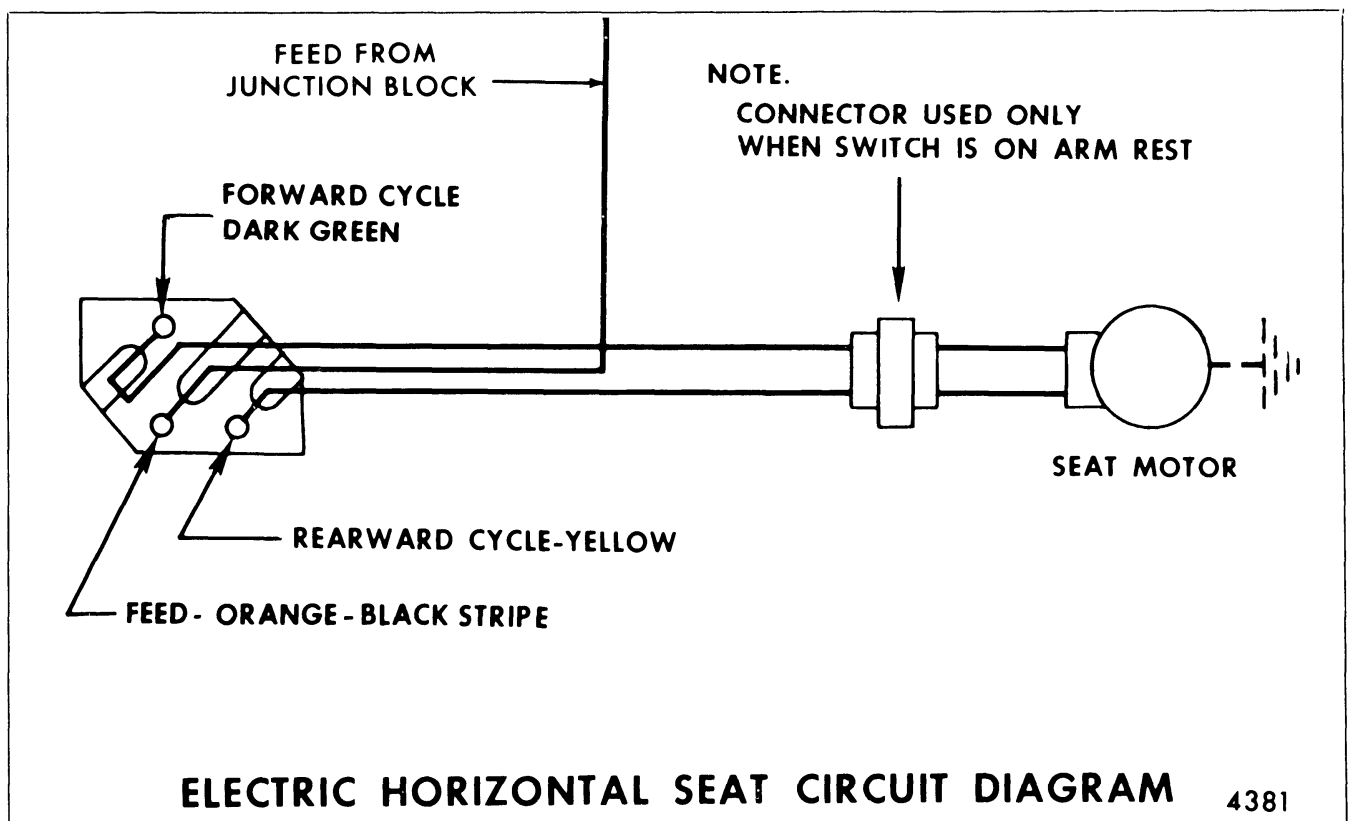


Fig. 10-32-Horizontal Seat Circuit

## DIAGNOSIS CHART - HORIZONTAL SEAT

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat motor does not operate in either forward or rearward direction.	<p>A. Open or short circuit in feed harness.</p> <p>B. Inoperative motor.</p>	<p>A. Connect one test light lead to feed terminal of switch block (orange-black wire) and ground other tester lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.</p> <p>B. Check operation of seat control switch with jumper wire. See "Checking Door Window Control Switch" for similar operation.</p> <p>C. Check circuit from control switch to motor for short or open circuit and check ground wire attachment of adjuster.</p> <p>D. Check operation of motor with No. 12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Motor should operate.</p> <p>Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.</p>
2. Seat motor operates in only one direction.	<p>A. Defective switch.</p> <p>B. Open or short circuit in motor feed wires.</p> <p>C. Defective seat motor.</p>	<p>A. Check operation of seat control switch with jumper wire.</p> <p>B. Check circuit from control switch to motor for short or open circuit.</p> <p>C. Check operation of motor with No. 12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.</p>

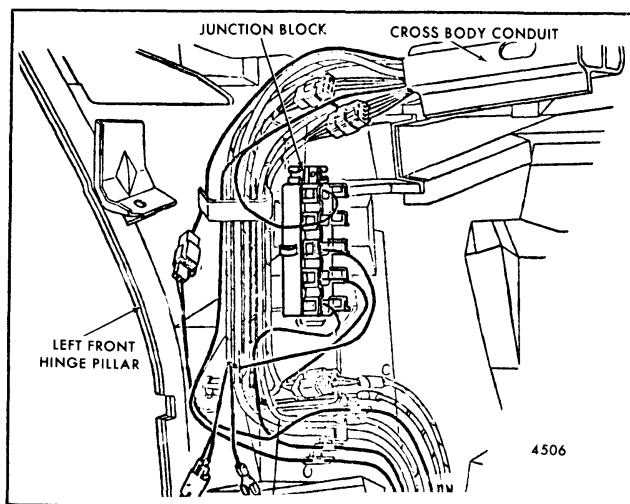


Fig. 10-33-Accessory Junction Block

The electrical portion of the six-way seat operates as follows:

When the control switch is actuated, current flows to the transmission solenoid which controls the desired seat movement. The energizing of the solenoid coil results in the solenoid plunger dog engaging the gear mechanism to rotate the control cable. The same switch action which energized the solenoid completes the circuit to one of the motor field coils. The current flows through the relay coil, closes the contacts between the relay power source and the motor armature feed wire, and results in the operation of the seat motor. When the control switch lever is released, the switch contacts open, a spring returns the shaft dog and solenoid plunger to their original position disengaging them from the gear dog.

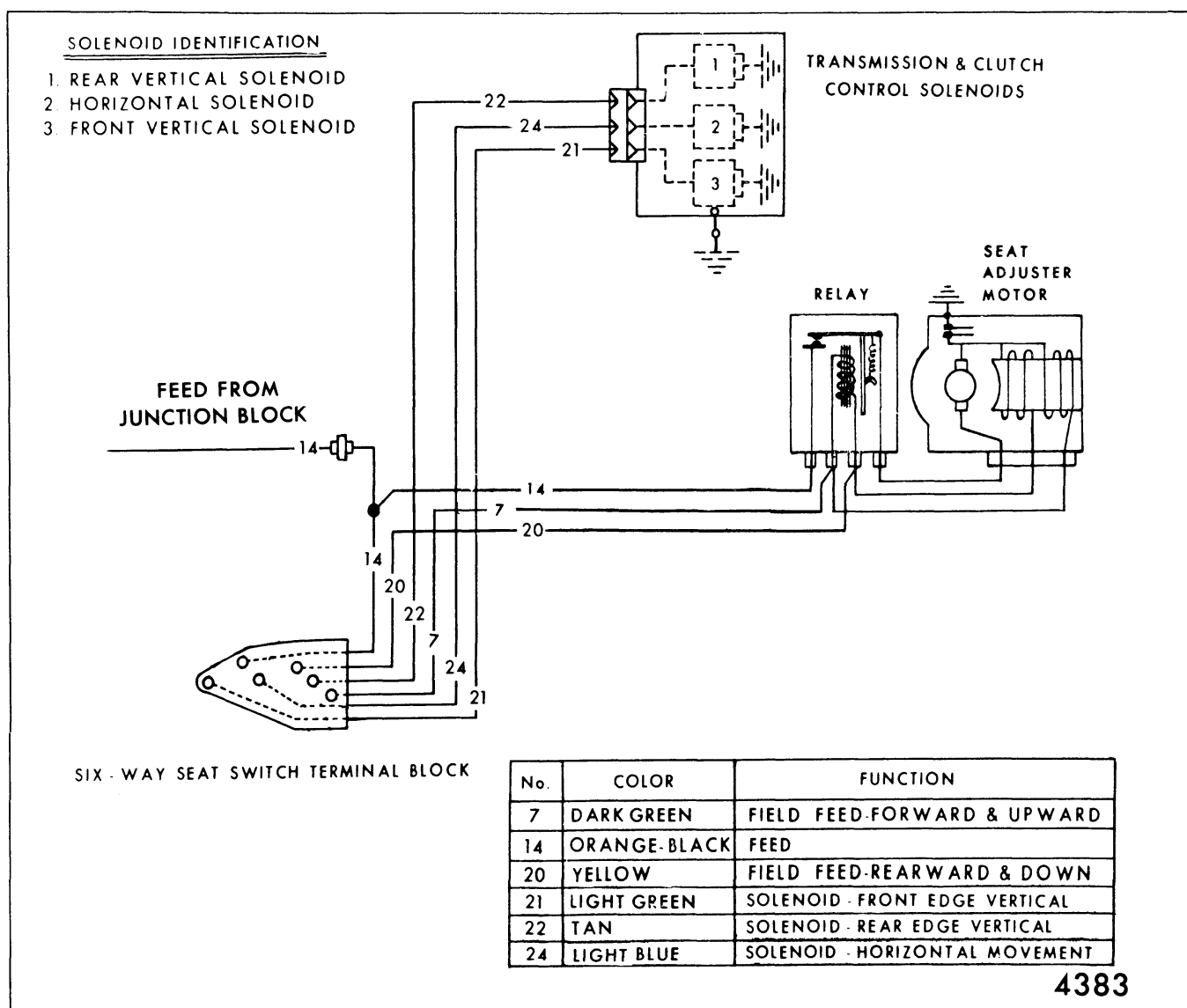


Fig. 10-34-Six-Way Seat Circuit

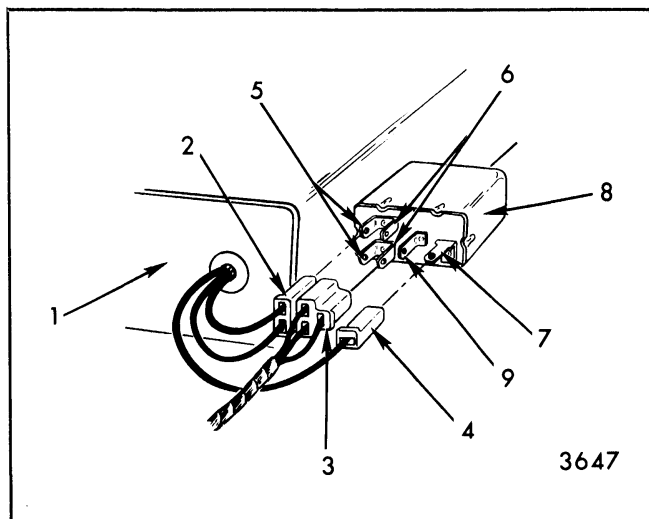


Fig. 10-35-Seat Adjuster Motor Control Relay

- |                                      |                           |
|--------------------------------------|---------------------------|
| 1. Seat Adjuster Motor               | 5. Motor Field Feed Studs |
| 2. Motor Field Connector             | 6. Relay Coil Studs       |
| 3. Control Switch to Relay Connector | 7. Armature Feed Stud     |
| 4. Motor Armature Connector          | 8. Motor Control Relay    |
|                                      | 9. Relay Input Stud       |

## CIRCUIT CHECKING PROCEDURES - SIX-WAY SEAT

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Before performing any extensive check procedures, check the seat adjuster drive cables for proper attachment. In addition, study the seat circuit diagrams to become familiar with the seat circuit (Fig. 10-34).

### Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to input side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, connect test light lead to the output side of breaker and ground other lead. If tester does not light, circuit breaker is inoperative.

### Checking Feed Circuit Continuity at Relay on Seat Motor

1. Disengage triple connector body from seat motor relay terminal (Fig. 10-35).

2. Insert one test lead into relay power feed (orange-black wire) connector slot on harness, and ground other test light lead.
3. If tester does not light, there is no current at end of feed wire. Failure is caused by an open or short in feed circuit.

### Check Feed Circuit Continuity at Seat Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other test lead to body metal.
2. If tester does not light, there is an open or short circuit between switch and power source.

### Checking Seat Control Switch

**NOTE:** In the following operations which specify the seat control switch to be actuated, a switch that has been checked for proper operation may be connected to the switch block. If a switch is not available, a three-way jumper wire can be made to perform the switch function. The jumper wire and the switch locations to be connected to obtain a specific movement of the seat are shown in Figures 10-36 and 10-37. If a jumper wire is used, letter the locations on the switch block as indicated in the illustration. Details outlining the making and use of the jumper wire follow the checking procedure.

1. Obtain switch or jumper wire and connect to switch block.
2. Operate switch. If adjusters operate with new switch or jumper wire, but did not operate with original switch, the original switch is defective.
3. Check all six movements of seat adjuster.

### Checking Wires between Control Switch and Motor Relay

1. Disengage triple harness connector from relay at motor.
2. Insert one test light lead into motor field (yellow or dark green wire) connector slot on harness and ground other lead.
3. Actuate seat switch to energize field wire being tested.

4. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch. Check other motor field wire in the same manner.

### Checking Motor Control Relay

1. Disconnect three motor leads (double and single connector) from relay assembly. These are wires leading from the motor to relay (Fig. 10-35).
2. Connect one end of a jumper wire to one of motor field feed studs on relay and ground other end of the jumper wire.
3. Connect one end of test light to motor armature feed stud on relay and ground other tester lead.
4. With a jumper wire, energize field stud which is not grounded. If tester does not light, relay is defective.

### Checking the Motor Assembly

1. Check seat ground wire attachment for proper ground.
2. Disconnect motor armature feed wire and motor field feeds from relay assembly.
3. With a jumper wire, energize armature feed and one of field feeds.
4. If motor does not operate, it is defective. Check other motor field wire in same manner.

### Checking the Wire between Solenoid and Switch

1. Disengage harness connector from transmission.
2. Connect one test light lead to end of harness wire being tested and ground other lead.
3. Operate switch to energize wire being tested. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch.
4. Check other wires between solenoid and switch in same manner.

### Checking Solenoids

1. Check seat ground wire attachment for proper ground.
2. Energize solenoid being checked with jumper wire.

**NOTE:** If solenoid is functioning, a "click" should be heard when solenoid is energized.

**CAUTION:** To prevent damaging solenoid, do not energize solenoid for more than one minute.

3. With solenoid energized, actuate seat control switch to energize adjuster motor.
4. If adjusters do not operate, and there is no mechanical failure in seat unit, solenoid is defective.

### Three-Way Jumper Wire for Checking Seat Switch

To make jumper wire, obtain two pieces of No. 12 gauge wire, each 4-1/2" long, join one end of each wire as shown in Figure 10-36. The joined end can be inserted in the feed location in the switch block; one of the remaining ends can be inserted into one of the field locations in the switch block; the other end can be inserted into one of the solenoid locations.

**NOTE:** To obtain a seat movement using a 3-way jumper wire at the switch block, the switch feed location, one of the motor field wire locations and one of the solenoid locations must be connected simultaneously.

1. On bodies with switch in seat side panel (Fig. 10-36) proceed as follows:
  - a. To raise front end of seat, place jumper in locations A, F and E.
  - b. To lower front edge of seat, place jumper in locations A, C and E.
  - c. To raise rear edge of seat, place jumper in locations A, F and D.

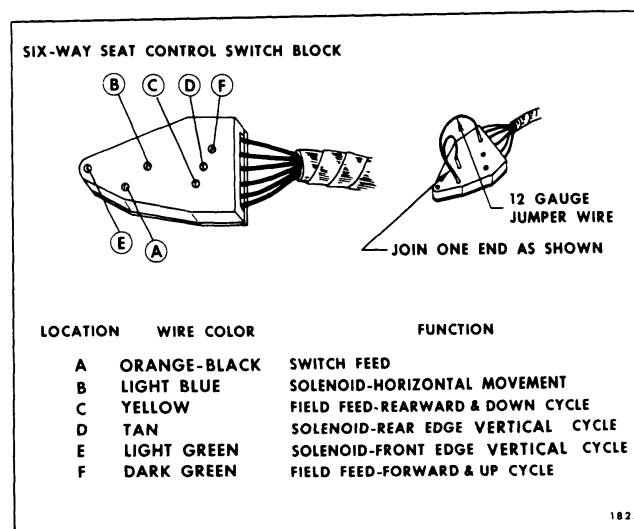


Fig. 10-36-Six-Way Seat Switch Block in Seat Side Panel

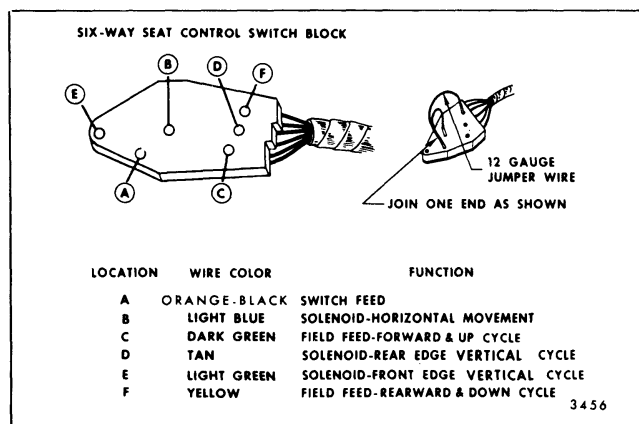


Fig. 10-37-Six-Way Seat Switch Block in Arm Rest

- d. To lower rear edge of seat, place jumper in locations A, C and D.
  - e. To move seat forward, place jumper in locations A, B and F.
  - f. To move seat rearward, place jumper in locations A, C and B.
2. On bodies with switch in arm rest (Fig. 3456) proceed as follows:
    - a. To raise front edge of seat, place jumper in locations A, C and E.
    - b. To lower front edge of seat, place jumper in locations A, F and E.
    - c. To raise rear edge of seat, place jumper in locations A, C and D.
    - d. To lower rear edge of seat, place jumper in locations A, F and D.
    - e. To move seat forward, place jumper in locations A, C and B.
    - f. To move seat rearward, place jumper in locations A, F and B.

**DIAGNOSIS CHART - SIX-WAY SEAT**

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat adjuster motor does not operate	<p>A. Short or open circuit between power source or switch and motor.</p> <p>B. Defective motor.</p>	<p>A. Check circuit from power source and switch to motor to locate failure.</p> <p>B. Check motor. If defective, repair or replace as required.</p>
2. Seat adjuster motor operates, but seat adjusters are not actuated or seat adjuster motor operates, front edge of seat moves up and down and seat moves forward and rearward. The rear edge of seat cannot be operated.	<p>A. Short or open circuit between switch and affected solenoid.</p> <p>B. Defective solenoid.</p>	<p>A. Check circuit from switch to solenoid to locate failure.</p> <p>B. Check solenoid. If defective, repair or replace as required.</p>
3. Seat adjuster motor operates and seat adjusters move front and rear edge of seat up and forward but will not move the seat down and rearward or seat adjuster motor operates and seat adjusters move front and rear of seat down and rearward, but will not move the seat up and forward.	<p>A. Short or open circuit between one of the motor field wires and seat control switch.</p> <p>B. Defective field coil in motor.</p>	<p>A. Check circuit between affected motor field wire and seat switch.</p> <p>B. Check motor. If defective repair or replace as required.</p>

## SEAT BELT WARNING SYSTEM

### DESCRIPTION

The complete front seat belt warning system consists of a switch in each lap belt retractor, a sensor switch in the seat cushion on the passenger side, reminder lamp and buzzer designed to warn the driver and/or passenger if their lap belt(s) are not fastened when the car is driven forward.

In addition, the circuit wiring is routed through the ignition switch and part brake warning switch on styles equipped with manual transmissions or through the ignition switch and transmission switch on styles equipped with automatic transmissions.

The feed portion of the circuit from the power source through the warning lamp and warning buzzer is contained within the car division wiring harness. All remaining circuitry to ground is contained within the body wiring harness (Fig. 10-38). For diagnosis or replacement of components contained within car division circuitry, refer to car division publications.

The body wiring (Fig. 10-38) includes a cross-over under the instrument panel connected to wiring running aft to the seat belt retractor on the driver's side

and to the seat sensor and then retractor on the passenger's side.

With the ignition switch on and the park brake released on styles equipped with manual transmissions, or with the selector shift in a forward position on styles equipped with automatic transmissions, the warning circuit (light and buzzer) is closed until the driver's lap belt is extended to open the circuit.

The seat sensor on the passenger side will react when weights in excess of 0 to 47 pounds are applied to the cushion assembly and close the warning circuit. Extending the passenger belt will open the warning circuit.

### DIAGNOSIS CHART

The following typical conditions and corrections have been listed as an aid for eliminating electrical problems in the body portion of the seat belt warning system. It should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately with a continuity tester.

CONDITION	APPARENT CAUSE	CORRECTION
1. Warning system will not operate.	<p>A. Open circuit in power feed circuit.</p> <p>B. Improper grounding of lap belt retractors (both sides).</p> <p>C. Defective lap belt retractor switches (both sides).</p>	<p>A. Check for open circuits in front body wiring harness (Fig. 10-38). Repair or replace where necessary.</p> <p>A. Check ground.</p> <p>A. Replace retractors.</p>
2. Warning system will not shut-off.	<p>A. Grounded (shorted) circuit.</p> <p>B. Defective lap belt retractor switch(es).</p>	<p>A. Check for grounded (shorted) circuits in front body wiring harness (Fig. 10-38).</p> <p>A. Replace retractor(s).</p>



## TROUBLE SHOOTING (Cont'd.)

CONDITION	APPARENT CAUSE	CORRECTION
3. Warning system operates on passenger side on "A,F, and X" styles equipped with bucket seats (except swivel seats) without applying weight to cushion assembly, but system will shut off when extending passenger side lap belt.	A. Beam switch contacts jarred closed.	A. Grasp seat spring and beam switch from underside of seat, and deflect spring and switch downward a minimum of 3" and release slowly to reset switch contacts open.
4. Warning system will not operate on driver's side.	A. Open circuit in power feed circuit.  B. Improper grounding of lap belt retractor (driver's side).  C. Defective lap belt retractor switch (driver's side).	A. Check for open circuits in front body wiring harness (Fig. 10-38).  A. Check ground.  A. Replace retractor.
5. Warning system will not operate on passenger side.	A. Open circuit in power feed circuit.  B. Improper grounding of lap belt retractor (passenger side).  C. Defective seat sensor switch.  D. Defective lap belt retractor switch (passenger side).	A. Check for open circuits in front body wiring harness (Fig. 10-38).  A. Check ground.  A. Replace seat sensor switch.  A. Replace retractor.

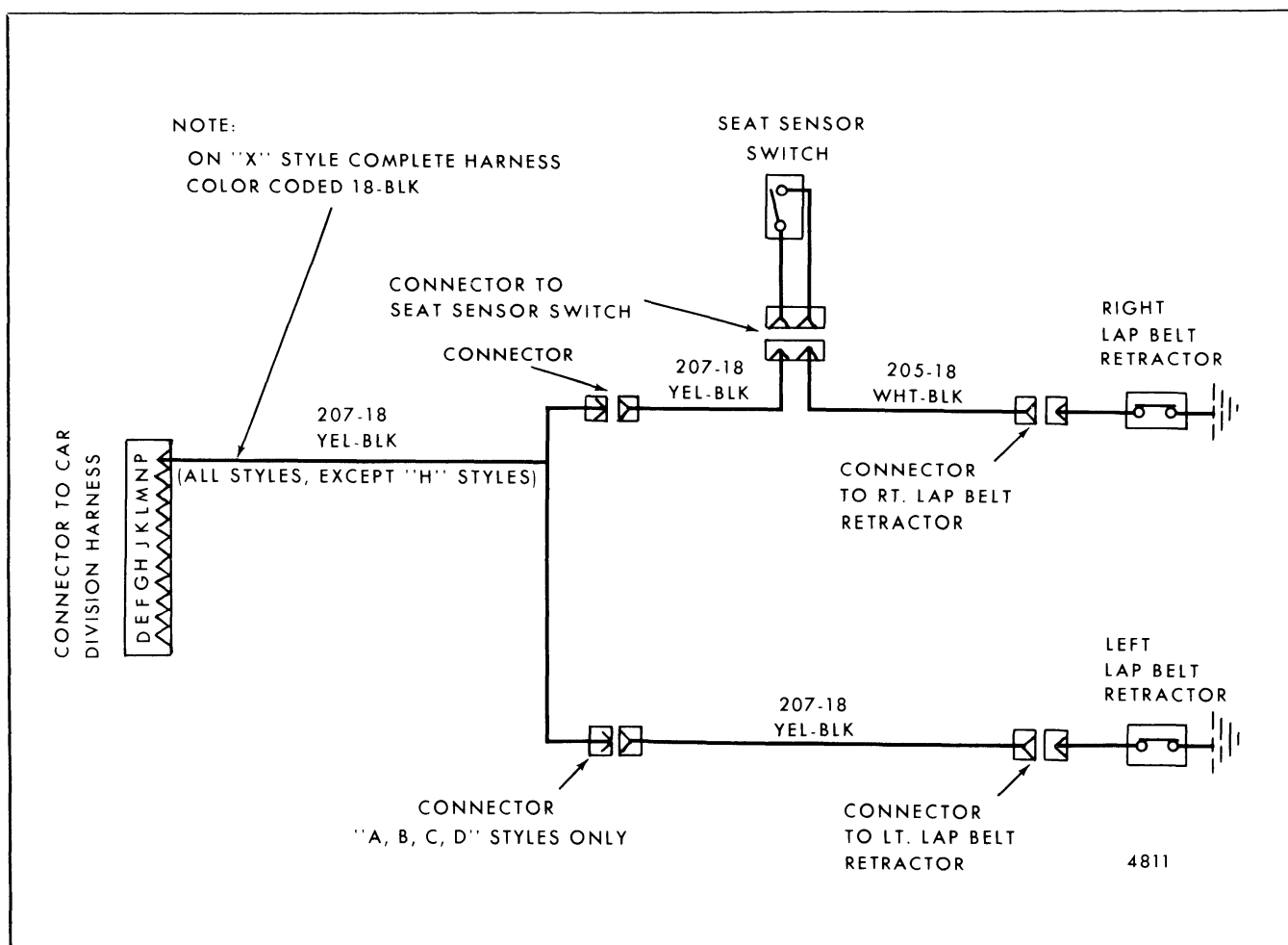


Fig. 10-38-Seat Belt Warning System Wiring Diagram

## POWER OPERATED SUNROOF-"A-37 and 57" Styles

### DESCRIPTION

Power sunroofs are operated by a two-way 12 volt series wound motor, with an integral drive gear mechanism, and two flexible drive gear cables. The motor is mounted to the roof panel, forward of the sunroof opening near the center of the windshield header area.

Electrical power for the system is supplied from a fuse panel mounted 40 amp circuit breaker to an accessory junction block located on the reinforcement at the left shroud. The wiring is then routed from the junction block to an ignition relay, also mounted on the left shroud panel (Fig. 10-39).

A relay is used in the circuit to prevent operation of the sunroof until the ignition switch is turned "ON".

A circuit breaker is used to protect the complete circuit.

**NOTE:** On styles equipped with power windows, the sunroof and windows use a common relay and circuit breaker (Fig. 10-39).

The wiring is then routed from the relay up the left pillar and across the header to a two position control switch located on the header pad.

### POWER SUNROOF CIRCUIT CHECKING PROCEDURE

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident,

follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams (Fig. 10-39).

### **Checking Feed Circuit Continuity at Circuit Breaker**

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.
2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was disconnected. If tester does not light, circuit breaker is inoperative.

### **Checking Ignition Relay Assembly**

1. With test light, check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.
2. Turn ignition switch "ON" and with test light check output terminal of relay (red/white wire). If tester does not light:
  - a. Put test light on ignition relay coil terminal (pink or orange).
  - b. If tester lights, replace ignition relay.
  - c. If tester does not light, locate short or open circuit along pink or orange wire (check fuse at dash panel).

### **Checking for Current at Control Switch**

1. With ignition switch "ON", connect one test light lead to the control switch feed terminal (red-white stripe) of the switch block and ground other test lead.

2. If tester does not light, there is an open or short circuit between the relay and control switch.

### **Checking Control Switch**

1. Connect one end of a No. 12 gauge jumper wire to the red and white switch feed wire and other end to light green motor feed wire. Using a second jumper wire, connect the black motor feed wire with the black switch ground wire.
2. If the motor operates with the jumper wires, but does not operate with the switch, either the switch is improperly grounded or the switch is defective.

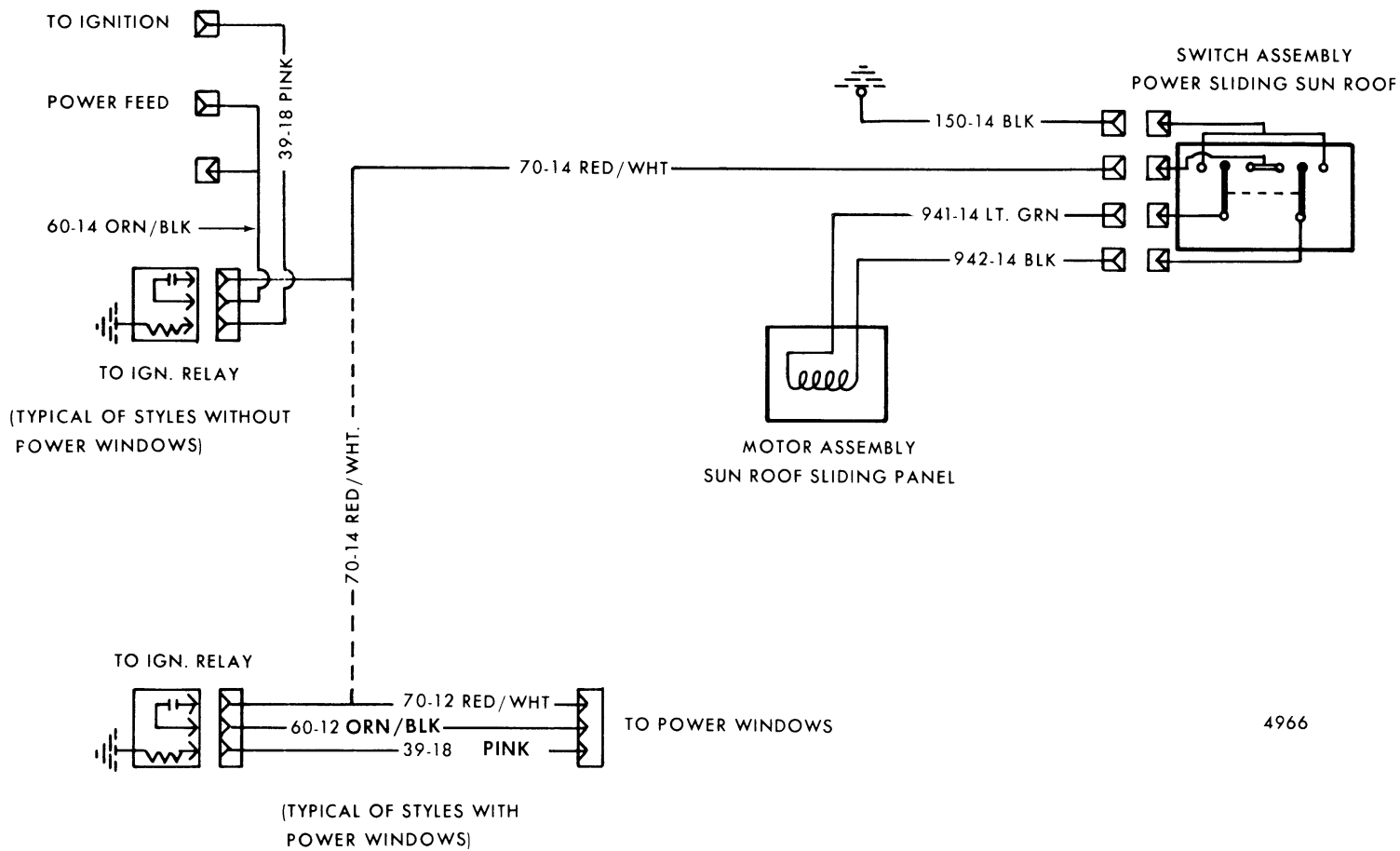
### **Checking Wires Between Control Switch and Motor**

1. Disengage harness connectors from motor.
2. Connect one end of a test light to ground and insert other end into one of the two motor feed wires.
3. Actuate control switch, if test lamp does not light when switch is actuated, there is an open or short circuit between the control switch and motor connector.
4. Check other motor feed wire, as outlined in Step Number 3.

### **Checking Sunroof Motor**

1. Disengage harness connector from motor.
2. Connect one end of a test light to ground and insert other end into one of the two motor feed wires.
3. Actuate control switch, if test lamp lights when switch is activated, either the control switch is improperly grounded or the motor is defective.

Fig. 10-39-Sunroof Circuit Diagram - "A-37 and 57" Styles



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**DIAGNOSIS CHART**

The following typical conditions and corrections have been listed as an aid for eliminating electrical

problems in the power sunroof electrical circuit. It should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	APPARENT CAUSE	CORRECTION
1. Sunroof will not operate with ignition switch on	<p>A. Short or open circuit in power feed circuit.</p> <p>B. Defective circuit breaker</p> <p>C. Defective ignition relay</p> <p>D. Defective control switch</p> <p>E. Defective motor</p> <p>F. Possible mechanical failure and binds</p>	<p>A. Check harness connectors</p> <p>B. Check feed circuit wires for possible short or open circuit</p> <p>C. Check ground at control switch</p> <p>A. Check circuit breaker operation</p> <p>A. Check ignition relay operation</p> <p>A. Check control switch operation</p> <p>A. Check motor operation</p> <p>A. Refer to index for sunroof removal, installation and adjustment procedures.</p>

## EXTERIOR AND INTERIOR LAMPS

### TAIL LAMPS AND SIDE MARKER LAMPS

All styles incorporate rear quarter side marker lamps which operates in conjunction with the tail lamp circuit. Refer to the appropriate rear harness circuit diagram located at the end of this section when checking for open or short circuits in tail lamps and/or side marker circuitry.

### DOMES AND SAIL LAMPS

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. Feed current is present at the dome lamp at all times and a ground is established through one of the switches. The "grounding" type door jamb switches are located in the front body hinge pillars and on some styles in the center pillar. The dome lamp harness, which contains two solid core wires both color coded white, is connected to the front body harness at

connector. The jamb switch wiring and jamb switch on "F-X" styles, as well as the headlamp switch on all styles, are installed by the Motor Divisions. The portion of the dome lamp circuit contained in the main body harness is color coded (orange-feed wire and white-ground wire). The circuit diagrams are at the end of the Electrical Section.

### ELECTRONIC LAMP MONITORING SYSTEM-Oldsmobile "B, C and E" Styles

The optional electronic lamp monitor incorporates an instrument panel mounted indicator lamp, front and rear wire harness and monitoring unit (located in the rear compartment). In the event of an exterior lamp failure, the indicator lamp lights indicating a failure. A physical inspection is then required to determine the location of the failure. Refer to Figures 10-40 through 10-44 for the appropriate circuit diagram.

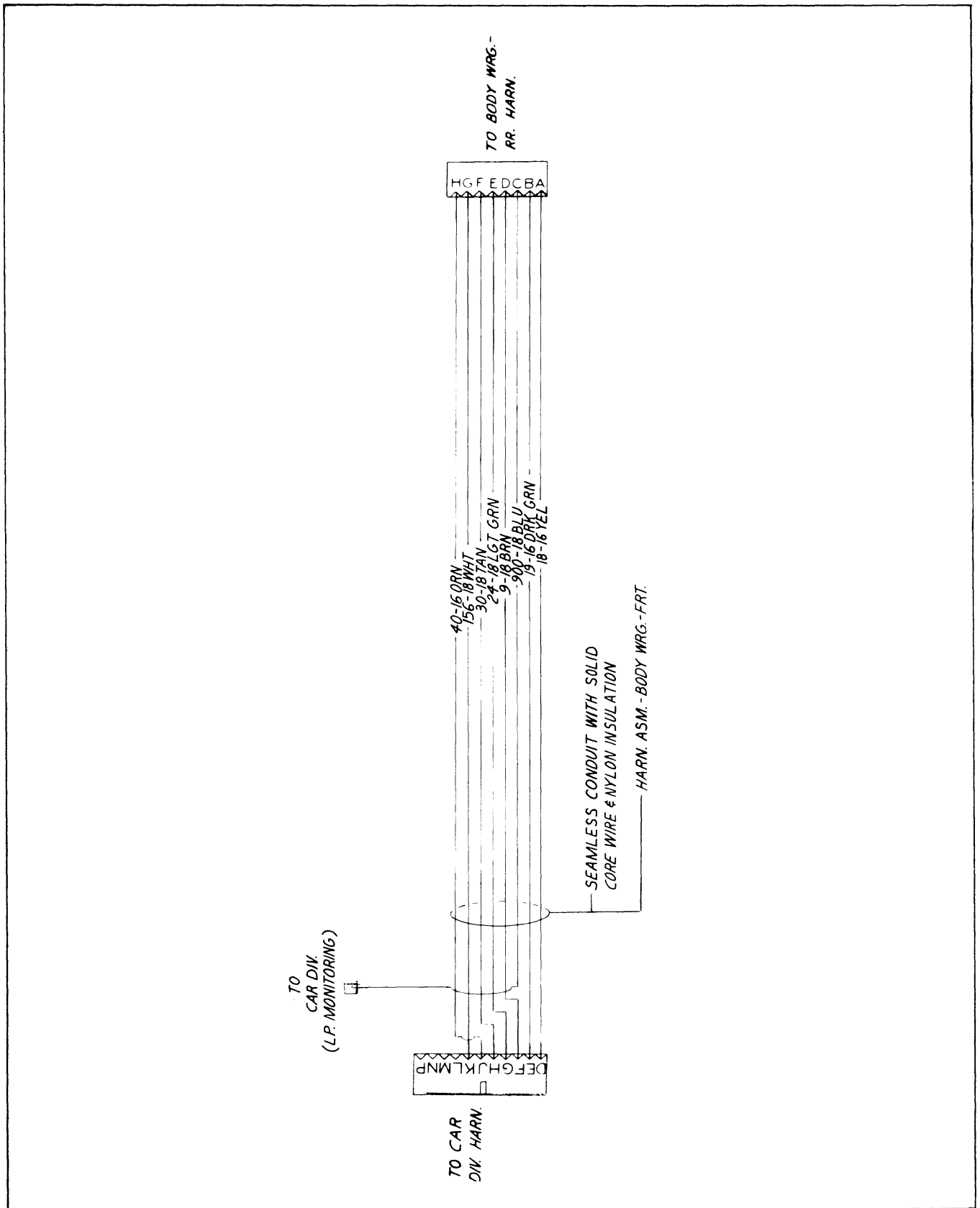
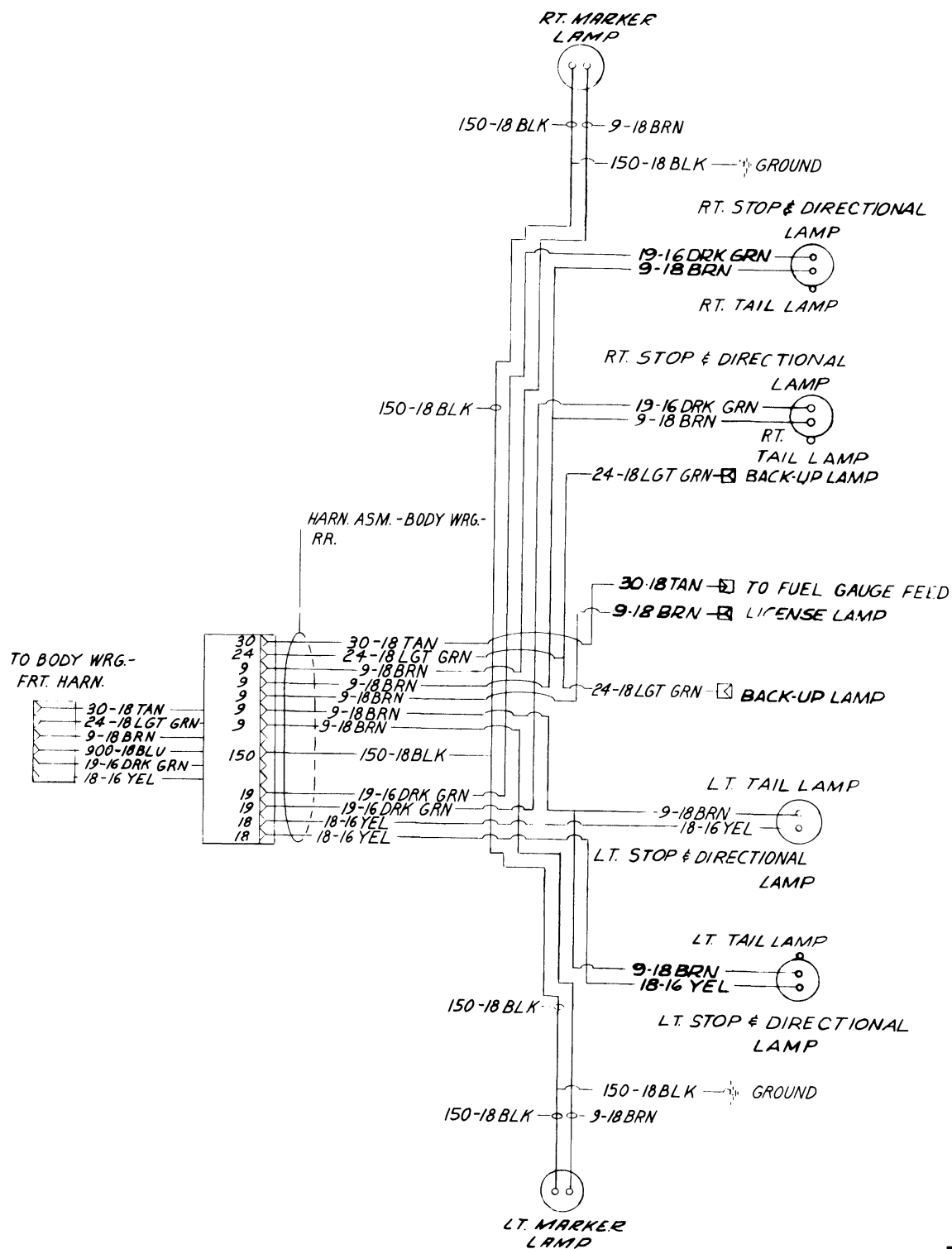
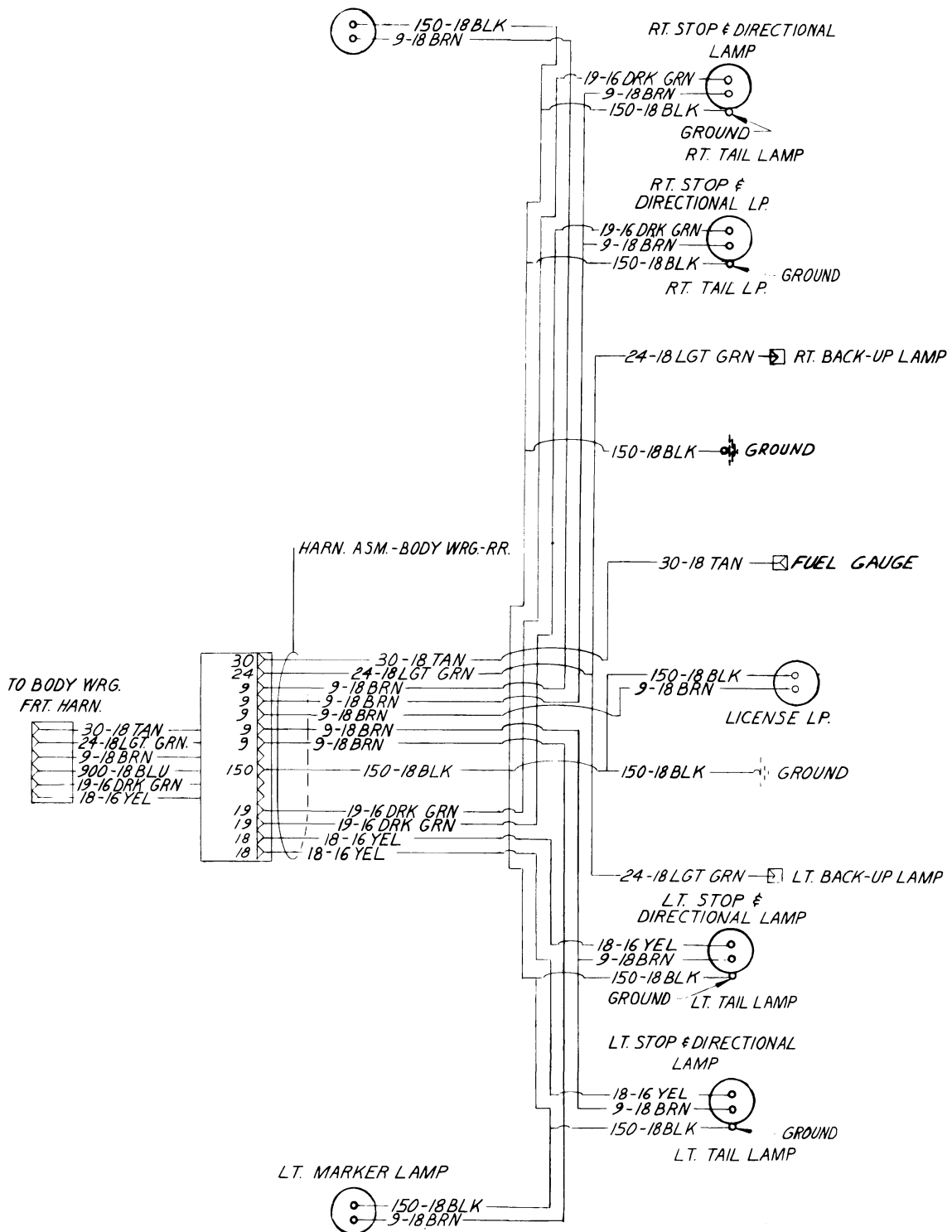


Fig. 10-40-Electronic Lamp Monitoring System - Front Harness Circuit Diagram - Oldsmobile "B, C and E" Styles



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Fig. 10-41-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "B-35 and 45" Styles



7232

Fig. 10-42-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "B-39,57,67 and 69" Styles



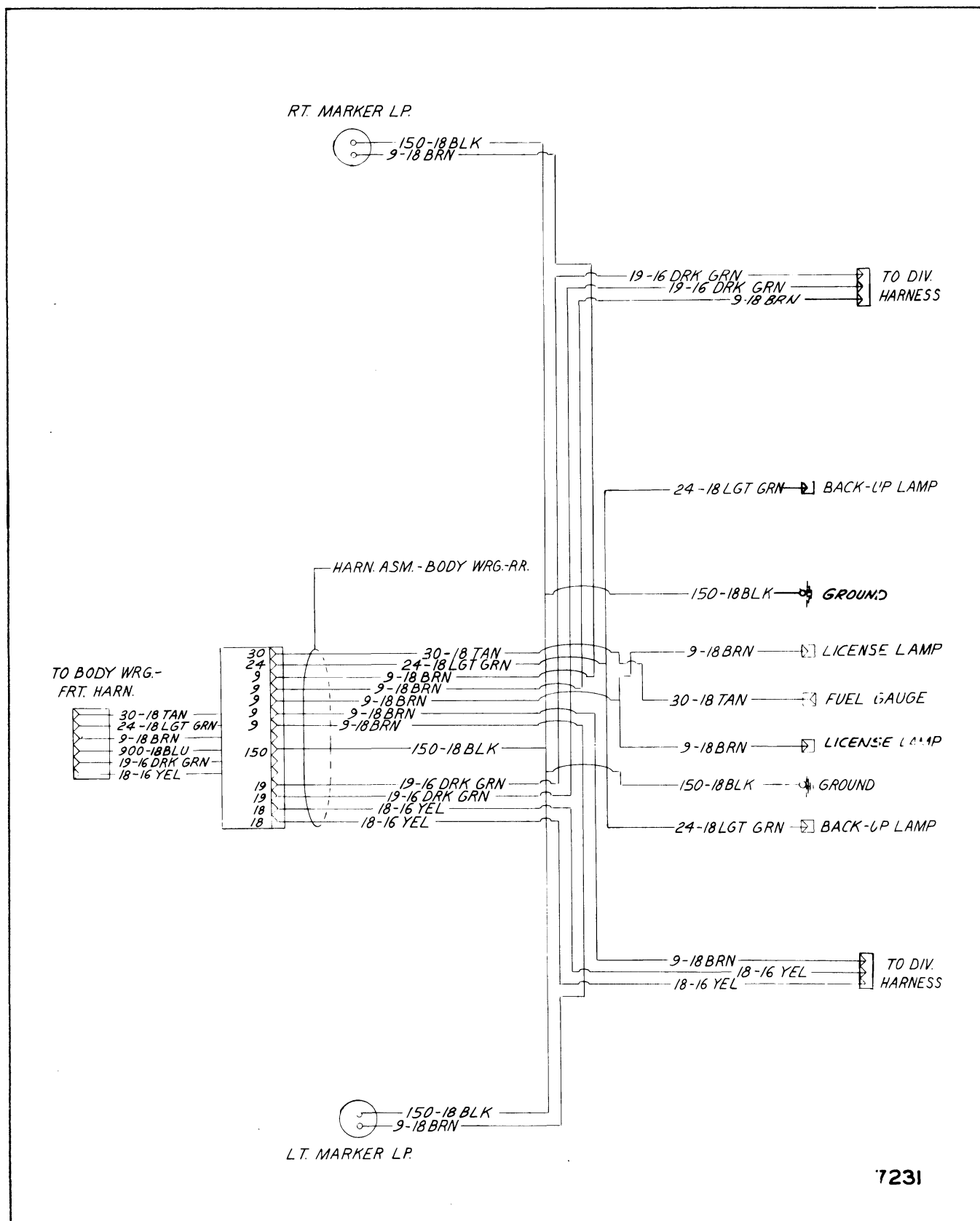


Fig. 10-43-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "C-37 and 39" Styles

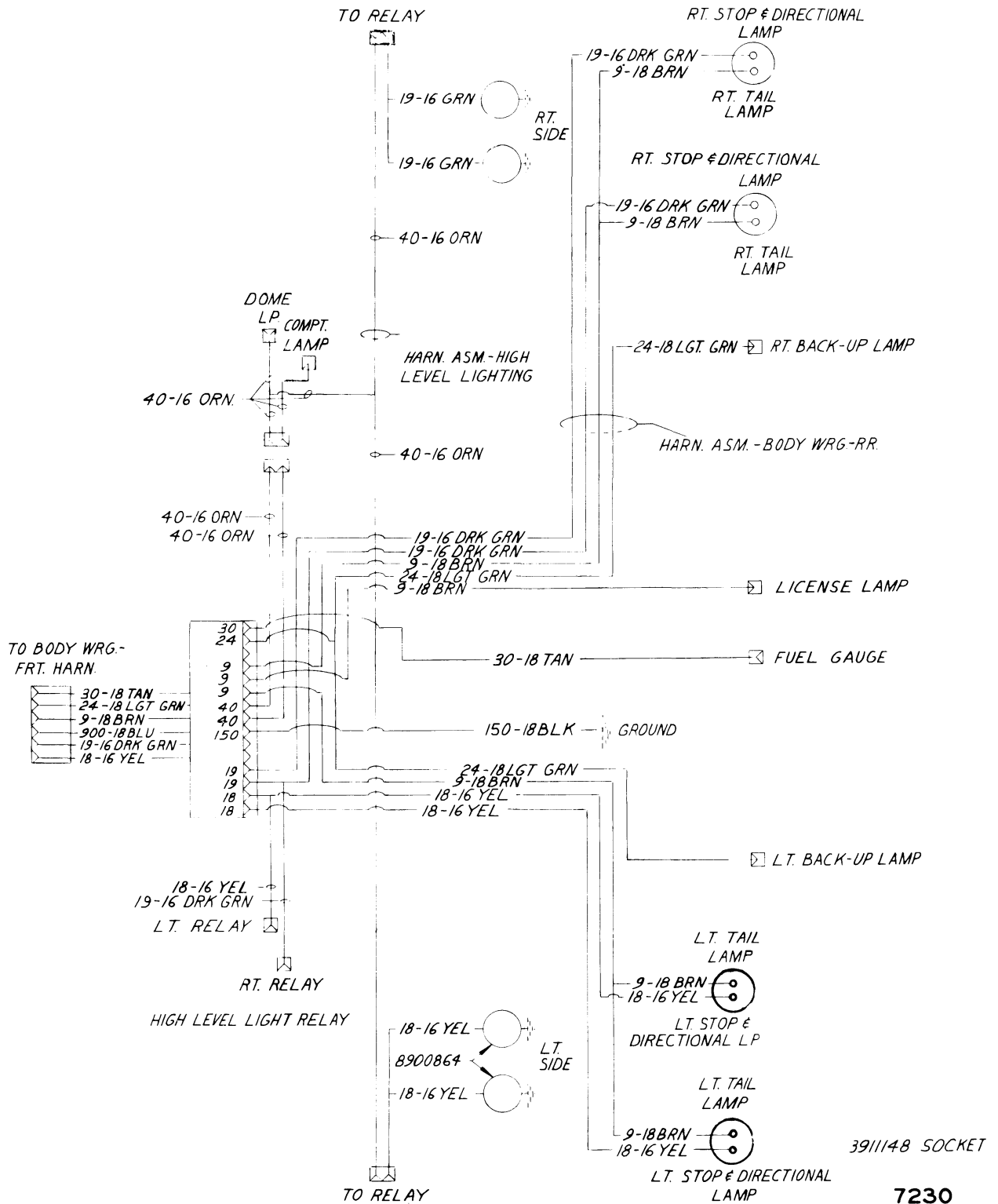


Fig. 10-44-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "E-57" Style

## ELECTRIC DOOR LOCK

### DESCRIPTION

The optional electric door lock system incorporates a solenoid for each door and a control for each front door except "F" style which has one instrument panel switch. All doors lock and unlock electrically from the control switch or manually from each door in the conventional manner. Each solenoid has an internal circuit breaker which (under extreme conditions) may require up to three minutes to reset.

The door lock harness is routed in the power window harness conduit.

### CHECKING PROCEDURE - All Except "F" Styles

Before beginning electrical checks, be sure system is free of mechanical binds. Refer to Figure 10-45 for circuit diagram. The following checks are performed with a test lamp.

#### Junction Block Output - "A-B-C-E" Styles

1. Insert test prod into junction block output terminal.
  - a. If lamp does not light, check power feed jumper to junction block.
  - b. If lamp lights, check feed wiring for open or disconnect in circuit.
  - c. If lamp blinks (circuit breaker clicking on and off), locate and repair short circuit in feed wiring.

**NOTE:** Disconnect other options to isolate shorted circuit, if applicable.

2. Disconnect feed connector (orange/black, dark green and black wires) and insert test lamp prod into feed (orange/black) terminal.
  - a. If no light, locate and repair short or open in feed circuit.

#### Door Lock Control Switch

1. Insert test lamp prod into feed terminal of switch block.
  - a. If lamp does not light, locate and repair open or short circuit in orange/black wire.

2. Insert jumper between feed and lock (unlock) terminals. If locks operate in both cycles, replace switch.

#### Front And/Or Rear Door Lock Solenoid

1. Remove door trim panel.
2. Disconnect solenoid connector.
3. Insert test lamp prod into connector.
  - a. If lamp lights at both terminals when switch is activated and solenoid is properly grounded, replace solenoid.
  - b. If lamp does not light at both terminals, locate and repair open or short circuit in black or dark green wire.

### CHECKING PROCEDURE - "F" STYLES ONLY

Prior to beginning electrical checks, insure that no mechanical binds exist. The electric door lock circuit diagram is shown in Figure 10-46. The following electrical checks are performed with the test lamp.

#### Door Lock Control Switch

1. Insert test prod into feed wire insulation at switch base.
  - a. If lamp does not light, locate and repair open in feed wire from circuit breaker.
2. Disengage door lock switch jumper harness connector (black and dark green wires) from door lock center harness connector.
3. Insert test lamp prod into each terminal of switch jumper harness connector (black wire-unlock and dark green wire-lock) and activate switch accordingly.
  - a. If lamp does not light at both terminals, locate and repair open wire or replace switch.

#### Door Lock Center Harness

1. Remove left shroud side finishing panel and disengage door lock center harness from door lock solenoid harness.





Fig. 10-46-"F" Style Electric Door Lock Wiring Diagram

2. Connect a jumper wire from the circuit breaker output at fuse block to door lock center harness feed connector.
3. Insert test lamp into corresponding terminal at left shroud side connector.
  - a. If lamp does not light, locate and repair open or short circuit.

**NOTE:** Circuit breaker will "click" open and closed if short circuit exists.

  - b. If lamp lights, repeat Step 2 and 3 for other terminals.
4. If lamp lights at both terminals at left shroud, repeat Steps 1, 2 and 3 at right shroud side panel.

### Door Lock Solenoid and Solenoid Harness

1. Remove door trim pad and disengage solenoid harness from solenoid.
2. Connect a jumper wire from the circuit breaker output at fuse block to one terminal of solenoid. Repeat at other terminal.
  - a. If solenoid operates in both functions, locate and repair open or short circuit in door lock solenoid harness.
  - b. If solenoid does not operate in both functions and no mechanical binds exist, replace solenoid.

**NOTE:** Prior to solenoid replacement, insure that solenoid body is properly grounded.

## ELECTRIC SEAT BACK LOCK RELEASE

### DESCRIPTION

Electric seat back lock release is optional on all 2-door styles equipped with electric door locks. The system utilizes a relay and two solenoids, one each for the driver and passengers seat backs and works in conjunction with insulated door jamb switches (Fig. 10-47), when either door is opened.

The insulated "flow through" type jamb switch completes the circuit from the power source to the seat back relay coil which is grounded through the case. When the seat back relay contacts close, the current flows from the power source to both the internally grounded driver and passenger seat back lock solenoids, releasing the seat back locks.

Each solenoid incorporates both an "unlock" and a "hold-in" coil. These coils are stacked in tandem around a single plunger and are energized simultaneously. The "unlock" coil draws approximately 18 amps of current and the "hold-in" coil approximately 0.6 amps. When the solenoid plunger reaches its full travel (approximately 1/4 inch), it trips an internal limit switch and opens the ground circuit for the "unlock" coil, leaving the "hold-in" coil energized.

When the door(s) is closed the relay contacts open, the solenoid de-energizes and allows the seat back locks to return to the lock position. The seat backs also incorporate a manual over-ride release.

The flow-through type jamb switch used in conjunction with this system is attached to the front body

hinge pillar by a threaded retainer (Fig. 10-47). It has a two prong female connector and is installed adjacent to the conventional jamb switch. Initial adjustment is made automatically by SLOWLY closing the door which positions the collar properly in the retainer. Further inward adjustment is accomplished in the same manner; however, after initial adjustment NO OUTWARD adjustment of jamb switch is possible.

**CAUTION:** If REARWARD adjustment of either front door is made, replace the jamb switch and close the door to adjust as stated in the preceding paragraph. Confirm correct operation by opening the door and slowly close it to the secondary lock position (first click). The seat back lock must then be locked (solenoid de-energized).

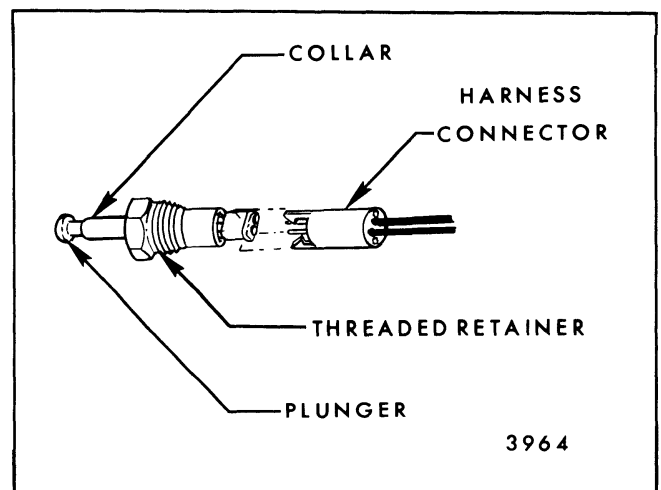


Fig. 10-47-"Flow Through" Type Jamb Switch

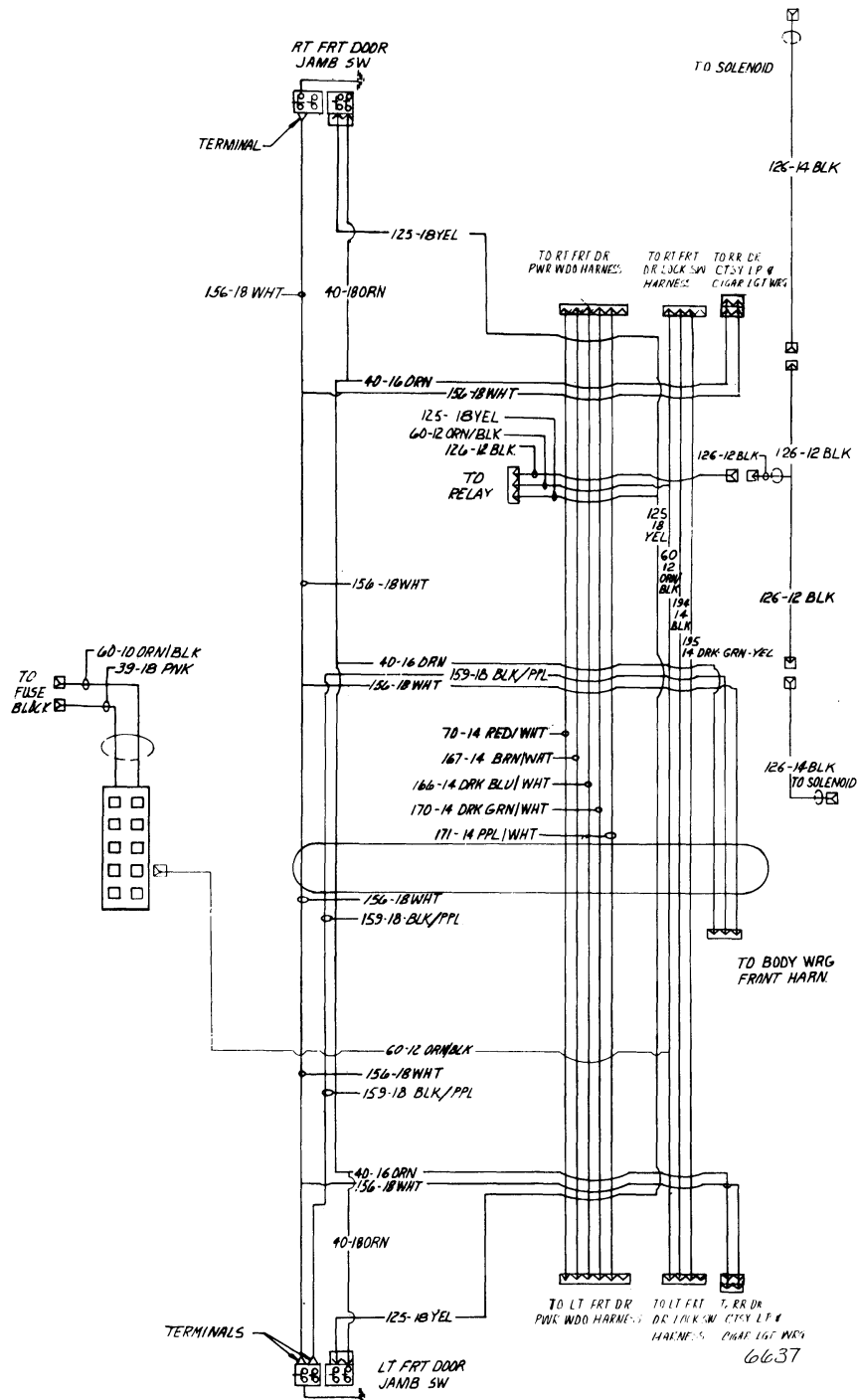


Fig. 10-48- "A-B-C-E" Style Electric Door and Seat Back Lock Circuit Diagram ("B-C-E" Styles Shown, "A" Style Similar)

## CIRCUIT CHECKING PROCEDURES

All of the checks are performed with a test lamp and one door open unless otherwise specified. Refer to Figure 10-48 for circuit diagram.

### Seat Back Lock Relay

The relay is located at the right shroud side panel on "A-B- C-E" styles.

1. Check output current at single connector (black wire). If lamp lights, relay is operative.

**NOTE:** If relay contacts stick, current will be present at the relay output (black wire to solenoid) and input (orange/black wire), but not at the relay coil input (yellow wire). Replace relay under these circumstances.

2. Check input current at the orange/black wire in relay connector.
  - a. If no light, locate and repair open or short circuit from circuit breaker.
3. Check relay coil current at yellow wire in relay connector.
  - a. If lamp lights and relay is properly grounded to body, replace relay.

- b. If no light, check jamb switch and jamb switch wiring.

### Seat Back Lock Solenoid

1. Check feed current at solenoid jumper (black wire) at solenoid.
  - a. If no light - locate and repair short between solenoid and relay.
  - b. If lamp lights - provide an external solenoid ground. If solenoid still fails to operate and no mechanical binds exist - replace solenoid.

**CAUTION:** On strato-seats the solenoid is replaced as part of the lock assembly for either a mechanical bind or solenoid failure.

### In Line Fuse - "A" Styles Only

1. If fuse has blown, connect "short finder" in place of the fuse and close both doors.
  - a. If "short finder" lamp blinks on and off, locate and repair short in orange wire to jamb switches.
  - b. If "short finder" lamp does not blink, open one door and then the other to determine which jamb switch is affected (yellow wire).

STYLE	GROUND WIRE LOCATION	FEED WIRE LOCATION	CONNECTOR LOCATION	TRIM REMOVAL REQUIRED TO DISCONNECT WIRES FOR GLASS R & I
"A" STYLES	Right Side	Left Side	Rear Compartment at Rear Seat Back Panel	Disconnect in Rear Compartment - Lift Rear Corners of Rear Seat to Back Window Trim Panel to Pull Wire Through
"F" STYLES	Right Side	Left Side	Rear Compartment	Rear Seat Cushion and Back, Shelf Trim and Right Quarter Upper Trim Panel
"B-C-E" STYLES Except Station Wagons & Convertibles	Right Side to Rear Compartment Lid Hinge Box	Left Side	Rear Compartment Under Shelf	Rear Seat Cushion and Back and Shelf Trim
STATION WAGONS	Right Side	Left Side	Left Upper Corner on Glass	Standard Glass Removal Operation
CONVERTIBLES	Right Side	Left Side	Exposed - Below Right and Left Lower Corners of Glass	None

Fig. 10-49-Connector Location - Optional Rear Window Electric Grid Defogger



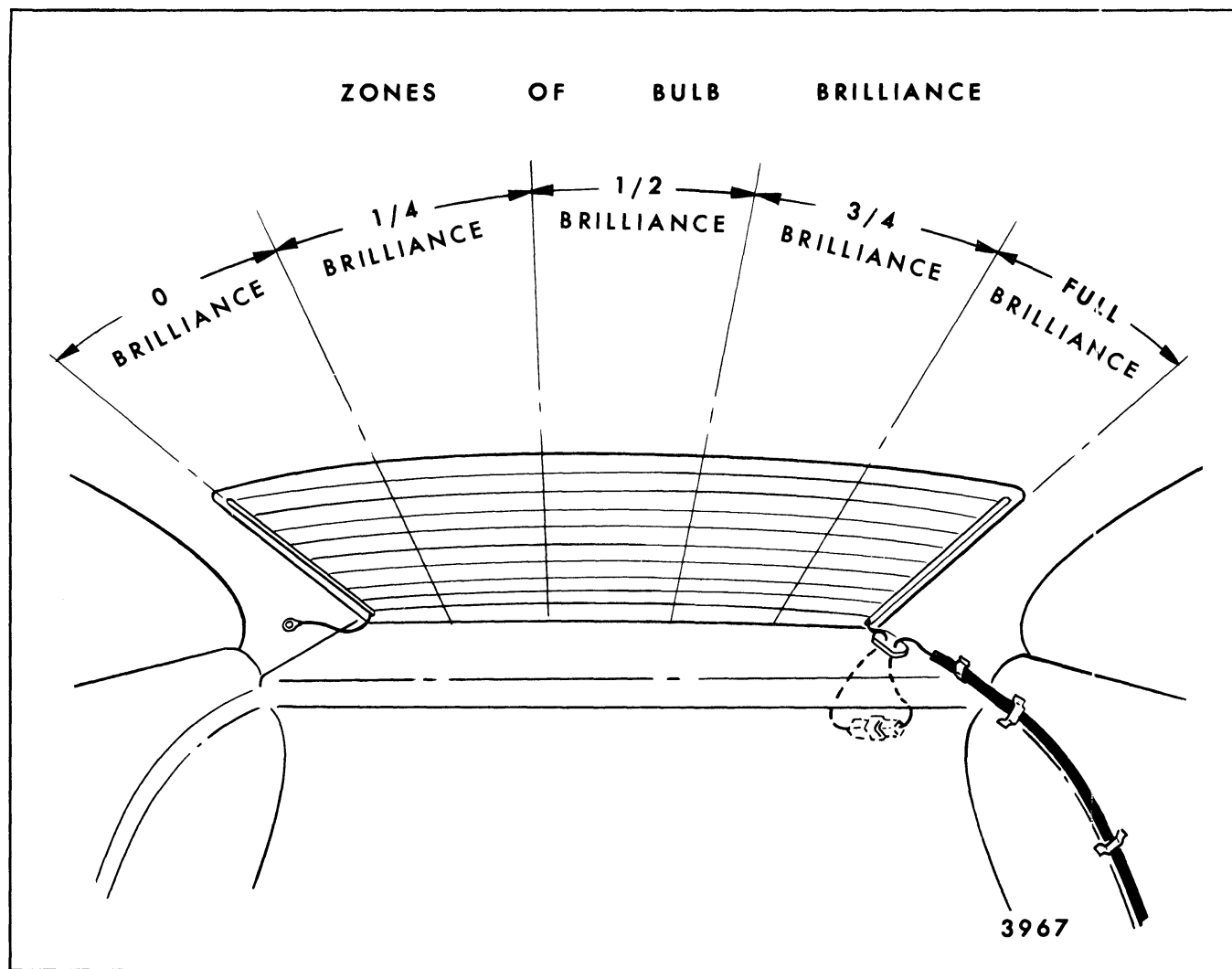


Fig. 10-50-Test Lamp Bulb Brilliance Zones - Normal Operating Electric Grid Defogger

### Jamb Switch

Remove the jamb switch from the pillar and touch test lamp prod to the orange wire terminal.

1. If no light at orange wire, locate and repair open circuit.

2. Place jumper from orange to yellow wire - if system operates replace jamb switch.

**NOTE:** Refer to "flow-through" jamb switch description for adjustment.

## ELECTRIC BACK WINDOW GRID DEFOGGER

### DESCRIPTION

The optional back window grid defogger system consists of a tinted glass that has a number of horizontal ceramic silver compound element lines and two vertical bus bars baked into the inside surface during the glass forming operation. Braided wire is soldered to the bus bars on each side of the glass except "B" style

station wagon tail gate glass. The feed wire terminal on the tail gate glass is soldered to the bus bar at the left upper corner. The lead wires (stranded, round wire) are spliced to the braided wire and covered with an extruded plastic sleeve to insulate them from body metal.

The system operates on 12 volts with a current draw

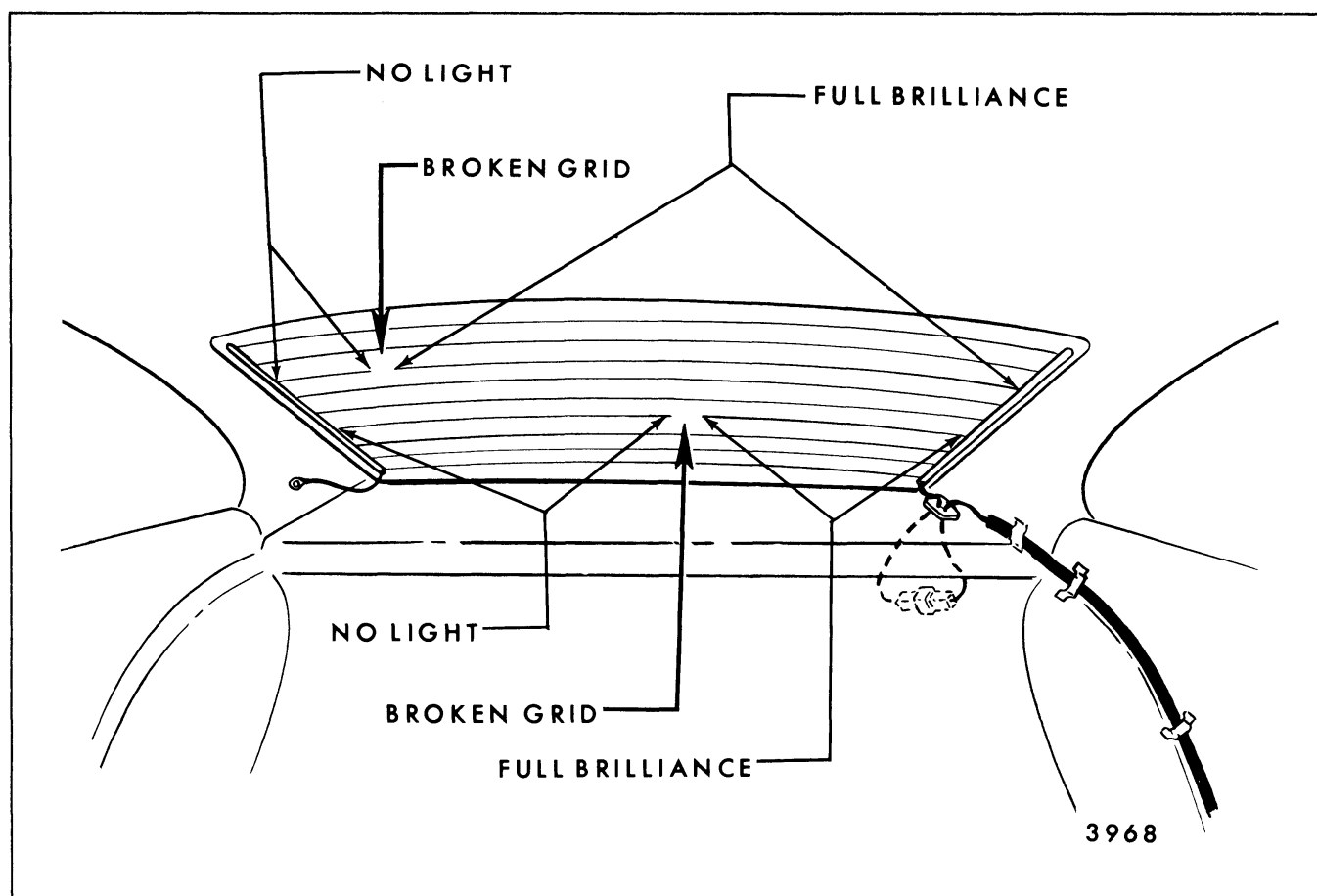


Fig. 10-51-Test Lamp Bulb Brilliance with Broken Grid Lines

of 20 amps (plus or minus 2 amps) when glass is at 75 degrees F. Under some conditions, heat from the glass may not be detected by finger touch. The length of time required to remove interior fog from the back glass will vary with such conditions as vehicle speed, outside glass temperature, atmospheric pressure, number of passengers, etc.

This system utilizes an instrument panel mounted switch with an integral indicator lamp. Once the switch has been activated, the system will operate continuously until that switch or ignition is turned "off". A relay is used in conjunction with the air conditioning system to regulate the blower motor speed when the heated back glass is in operation.

### Connector Location

The location of feed wire connectors differ on various styles. Figure 10-49 indicates location of lead wires and connectors.

**NOTE:** The ground wire screw on the rear seat back panel may in some cases, be inaccessible from the rear compartment. If this condition is encountered, cut the lead as close as possible to the attaching point. To reinstall, use a new "ring terminal" and secure the terminal with a sheet metal screw to a convenient location on the seat back panel.

### Testing Grid Lines

To locate inoperative grid lines, start engine and turn on the electric grid defogger system. Ground one test lamp lead and **LIGHTLY** touch the other prod to each grid line. Figure 10-50 illustrates the pattern of test lamp brilliance to be expected with a properly functioning grid.

**NOTE:** The range of zones in Figure 3967 may vary slightly from one glass to another, however, the bulb brilliance will decrease proportionally to the increased resistance in the grid line as the prod is moved from the left bus bar to the right.

All grid lines must be tested in at least two places to eliminate the possibility of bridging a break. For best

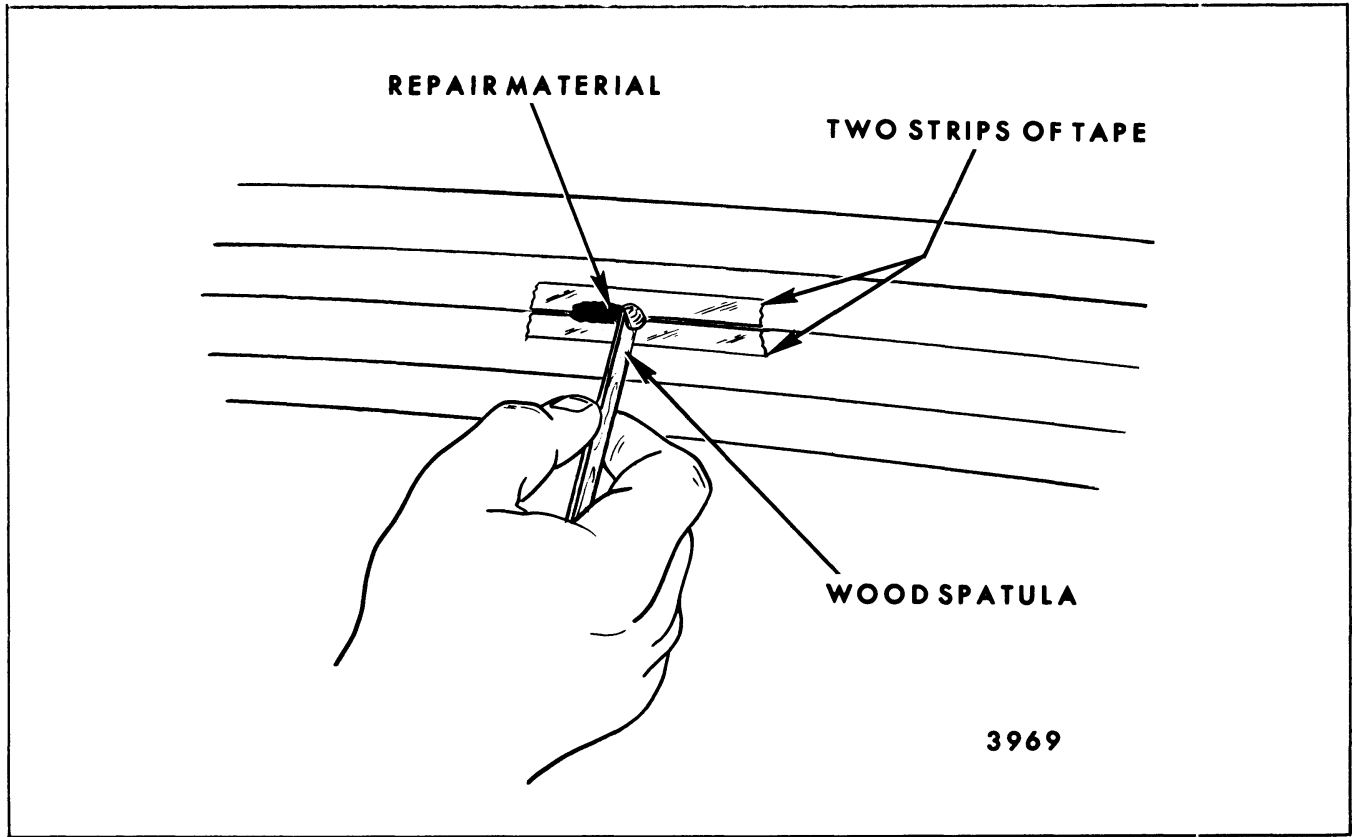


Fig. 10-52-Applying Repair Material to Broken Grid

results contact each grid line a few inches either side of the glass centerline. If an abnormal light reading is apparent on a specific grid line - place test lamp prod on that grid at the left bus bar and move prod toward the right bus bar until light extinguishes. This will indicate a break in the continuity of the grid line (Fig. 10-51).

### Grid Line Repair

A durable repair may be accomplished using the Rear Window Electric Grid Defogger Repair Kit (Part No. 1051223 or equivalent) which consists of:

1. Plastic rectangular shaped mixing plate
2. Decal
3. Syringe of silver plastic
4. Syringe of hardener
5. Mixing stick

6. Instruction sheet

### Repair Procedure

1. After the broken grid line has been located and marked (indicate break with a grease pencil on the outside surface of the glass), the system must be shut off.
2. Lightly buff grid line in area to be repaired with fine steel wool buffing approximately 1/4" on both sides of break. Thoroughly wipe with a clean cloth dampened in alcohol. It is necessary that all contaminants be removed from the repair area.
3. Use the decal supplied in the kit or apply two strips of electrician's plastic tape above and below the damaged grid line in order to control the width of repair material. Proper tape positioning may be checked from outside the vehicle.

**NOTE:** If the decal is used, be sure that the die-cut metering slot is the same width as the grid

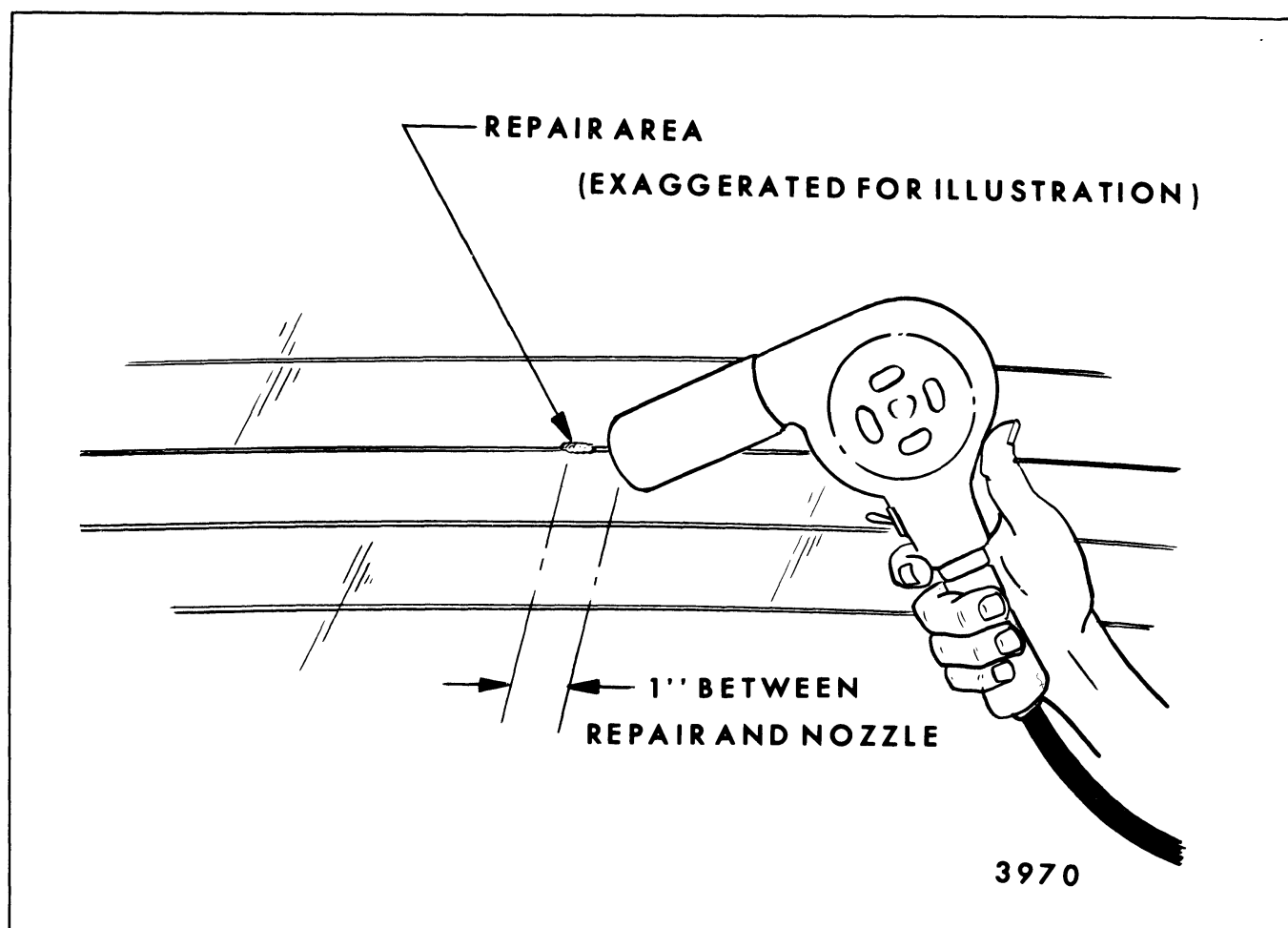


Fig. 10-53-Applying Heat to Grid Line Repair

line to be repaired. If the slot is too narrow or too wide, use tape as described in step 3.

4. Lay the plastic rectangular shaped mixing plate on a flat surface and dispense the silver color material in a circular ring on the mixing plate by pushing syringe plunger to the bottom.
5. Dispense dark hardener in the center of the circle by pushing dispenser plunger to the bottom.

**NOTE:** If hardener has crystallized, heat container at 108 degrees F. until hardener is liquid.

6. Mix the dark hardener into the silver plastic by blending the material with the mixing stick.
7. With the glass at room temperature, apply the repair material with the small wooden mixing spatula, slightly over-lapping the existing grid line either side of the break (Fig. 10-52).

8. Carefully remove the decal or tape.

9. Apply a constant stream of hot air directly to the repaired area with a heat gun (preferably 500 degrees F. to 700 degrees F. range) for 1 to 2 minutes. Heat gun nozzle should be held approximately 1 inch from repair (minimum of 300 degrees F. is essential for establishing conductivity) see Figure 10-53.

**CAUTION:** In order for the repaired area to reach the desired level of electrical conductivity, the repair material must be cured with heat. When working close to interior trim, it may be necessary to protect the trim that is immediately adjacent to the stream of heat.

10. Re-test grid lines to insure proper operation.

**NOTE:** Although grid defogger is operational, additional air dry time is required to effect a complete cure, therefore the area of repair must not be physically disturbed for 24 hours.

## Braided Lead Wire Repair

Repair of bus bar braided lead wire may be accomplished by resoldering with 3 per cent silver solder and rosin flux paste in the following manner:

1. Lightly buff the bus bar in the area to be repaired with fine steel wool to remove oxide coating formed during glass firing.
2. Brush a small amount of flux paste on bus bar.

3. Coat the tip of a small soldering iron with 3 per cent silver solder and draw across the bus bar depositing a thin coating of solder.

**NOTE:** Only enough heat to melt solder (to start flowing) is recommended. Contact bus bar for as short a time as possible.

4. Repeat the procedure for the braided lead.
5. Position the braided lead on the bus bar and apply heat to complete soldering operation.

## BACK WINDOW DEFOGGER (BLOWER TYPE)

### DESCRIPTION

The defogger is designed to operate at either high or low speed. Air is drawn into the defogger blower and directed against the rear window through a blower outlet.

### CIRCUIT CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. For circuit diagrams, refer to Figures 10-54 through 10-57.

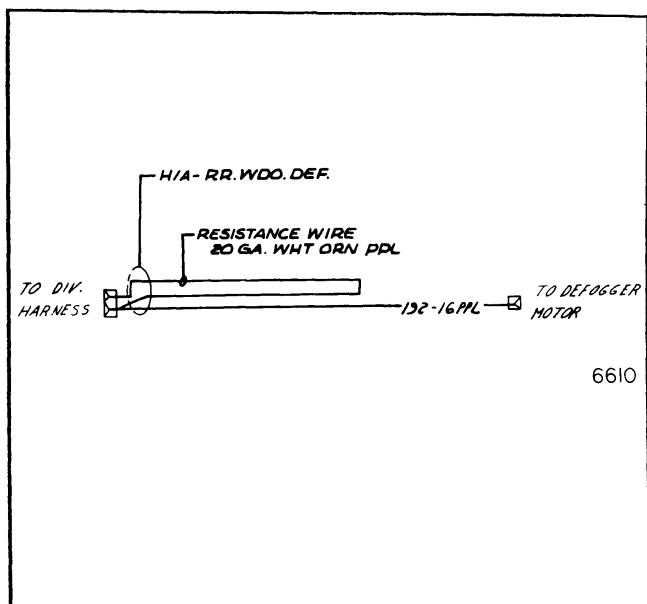


Fig. 10-54-Defogger Circuit Diagram - "A-B-C-E" Styles

### Checking Blower Control Switch

(Refer to Car Division Service Manual)

### Checking Blower Motor

1. Check blower motor ground wire for proper ground.
2. Disconnect blower motor feed wire.

**NOTE:** A resistor is used in the circuit to provide the difference between high and low speeds. If there is only one output feed wire at the switch connector, the resistor is located in the switch. If two output feed wires are found at the switch connector, the resistance is included in the low speed wire harness.

3. Using a 12-volt power source, connect the negative lead to the blower motor ground wire and the positive lead to the motor feed wire. If the

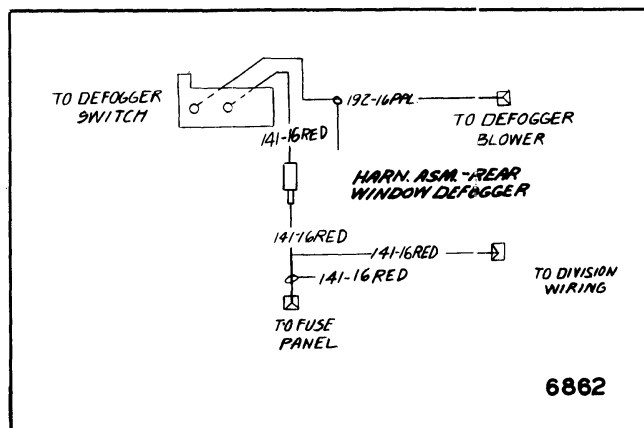


Fig. 10-55-Defogger Circuit Diagram - "X" Styles

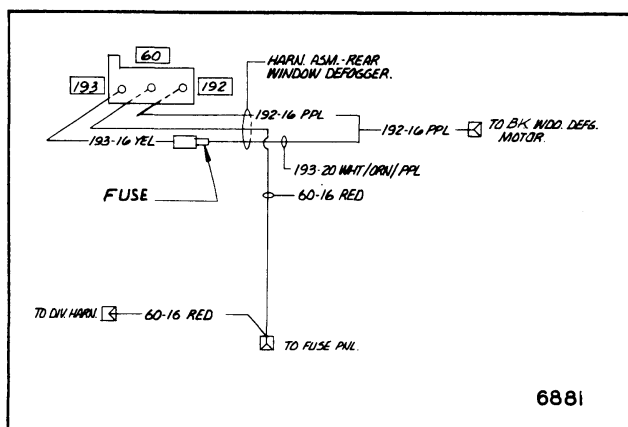


Fig. 10-56-Defogger Circuit Diagram - Chevrolet "F" Styles

blower does not operate, replace the blower as an assembly.

**NOTE:** If blower operates but air does not come

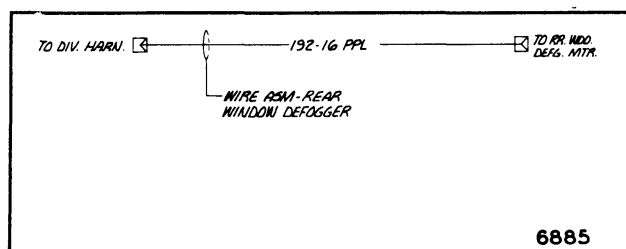
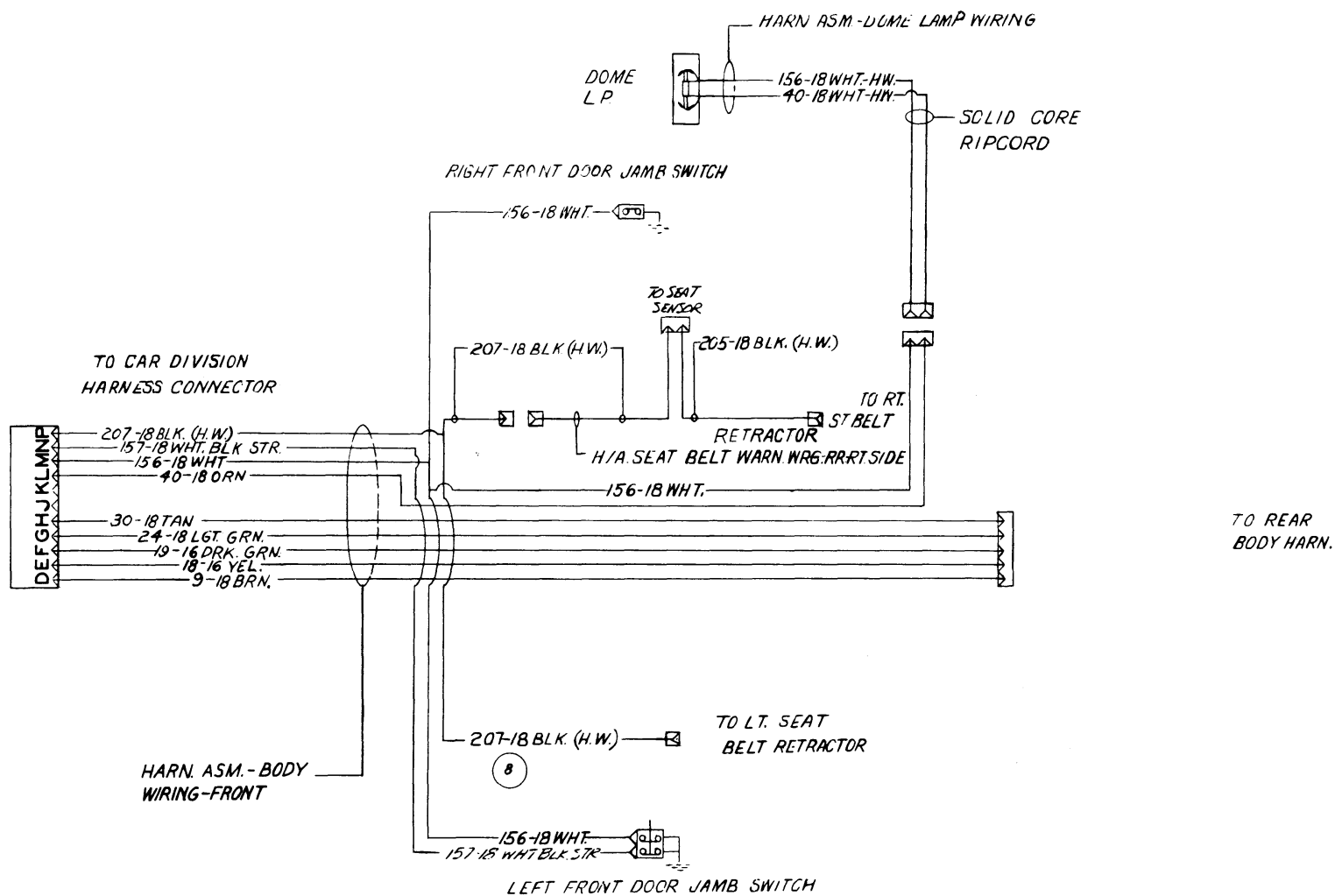


Fig. 10-57-Defogger Circuit Diagram - Pontiac "F" Styles

out of outlet grille, check for obstructions at air inlet and outlet.

4. If the blower motor and switch operate satisfactorily when checked, but the blower will not operate, or will not give both high and low speeds, locate and repair open or short circuit in feed wire(s) between switch connector and motor.



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Fig. 10-58-Front Harness Circuit Diagram - Chevrolet "X" Styles

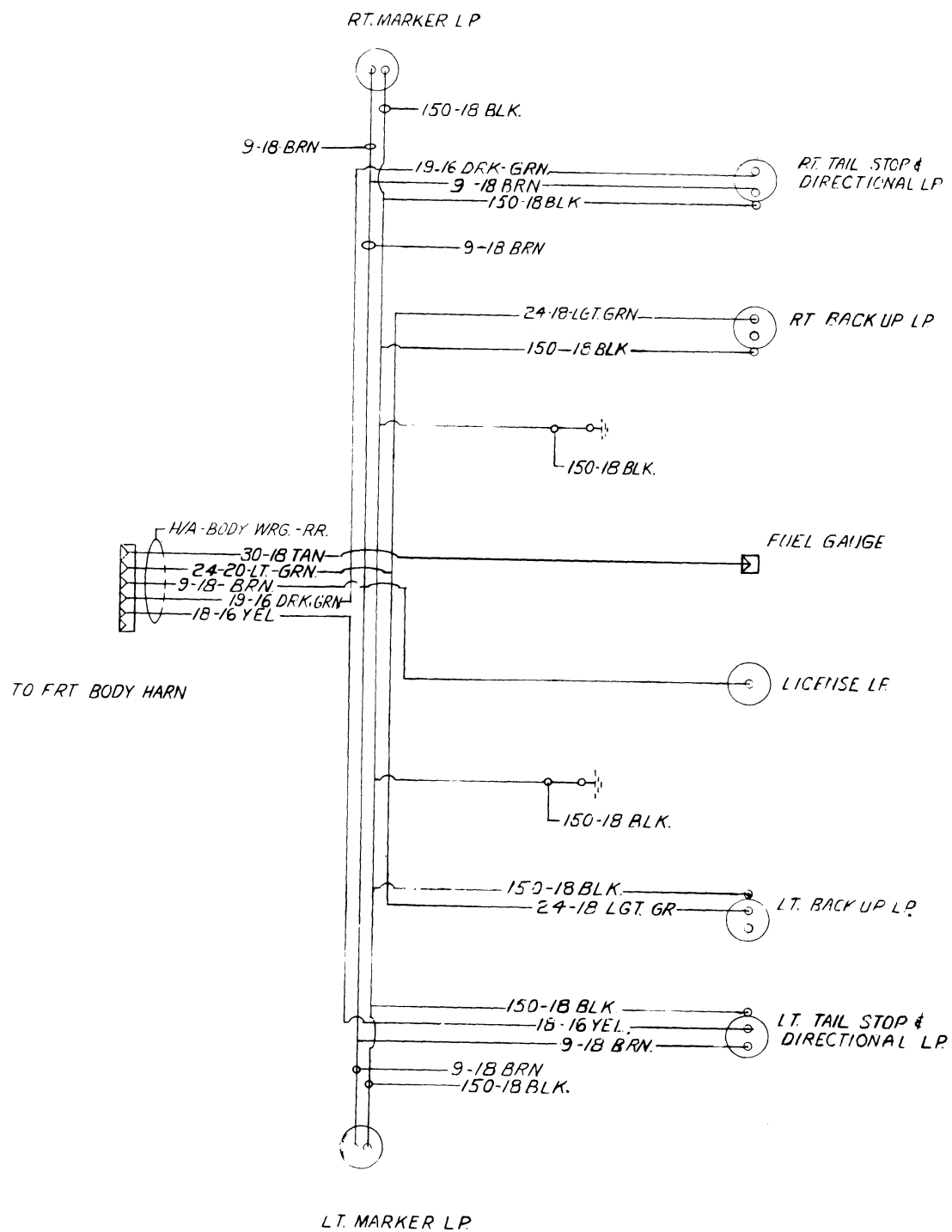
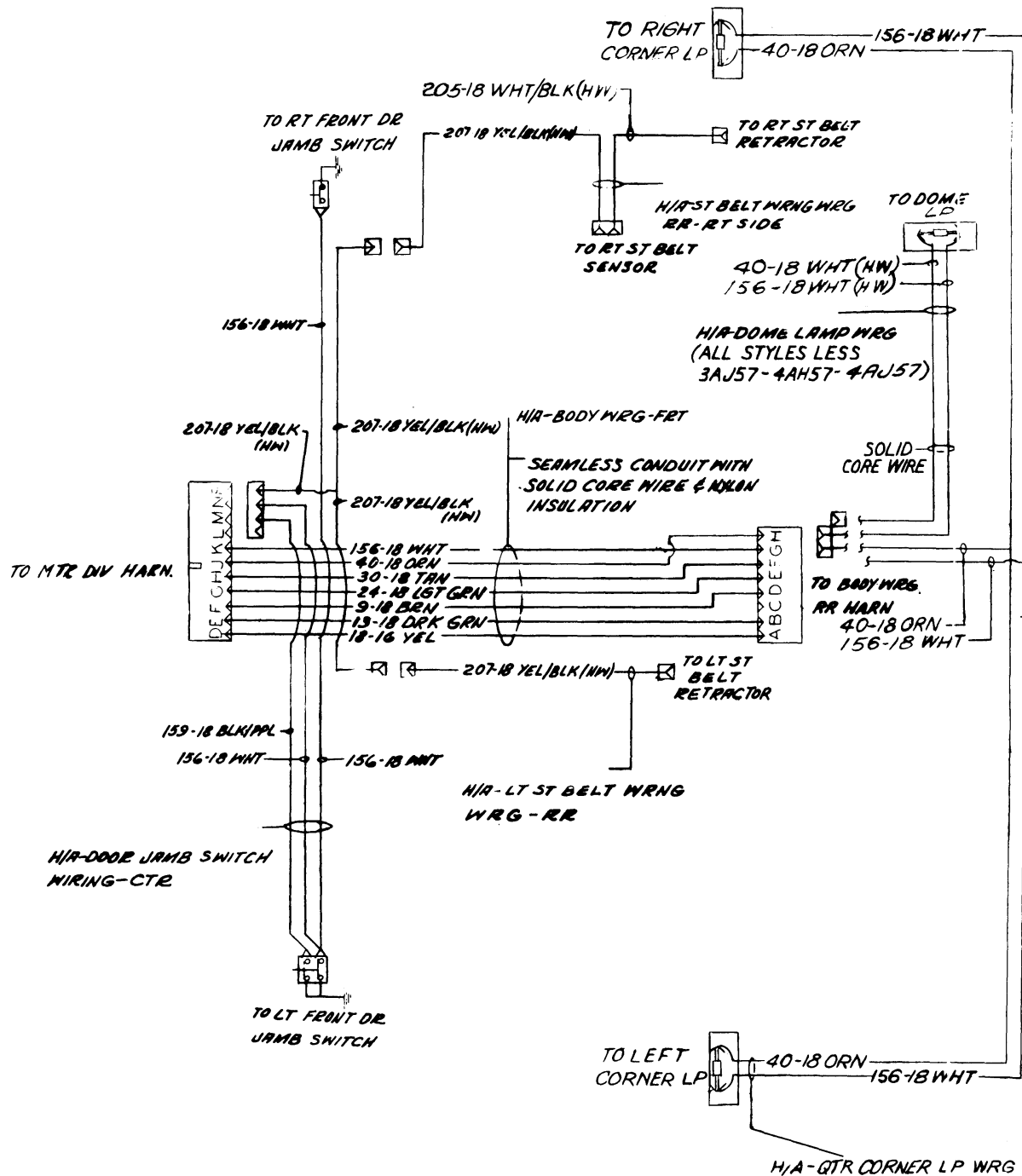


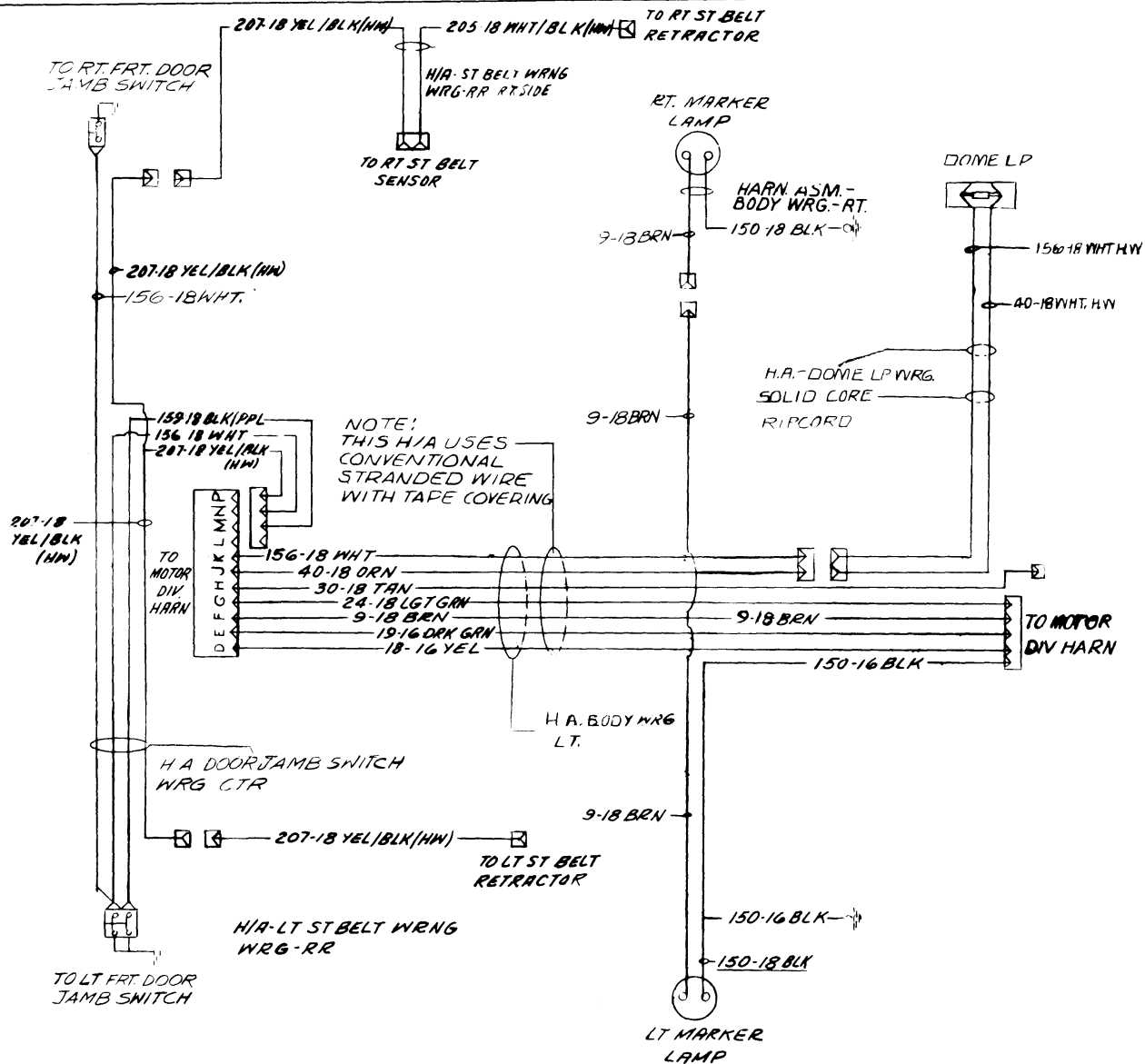
Fig. 10-59-Rear Harness Circuit Diagram - Chevrolet "X" Styles





6834

Fig. 10-60-Front Harness Circuit Diagram - Chevrolet "A-29-37-57" Styles



6892

Fig. 10-61-Front Harness Circuit Diagram - Chevrolet "A-80" Styles

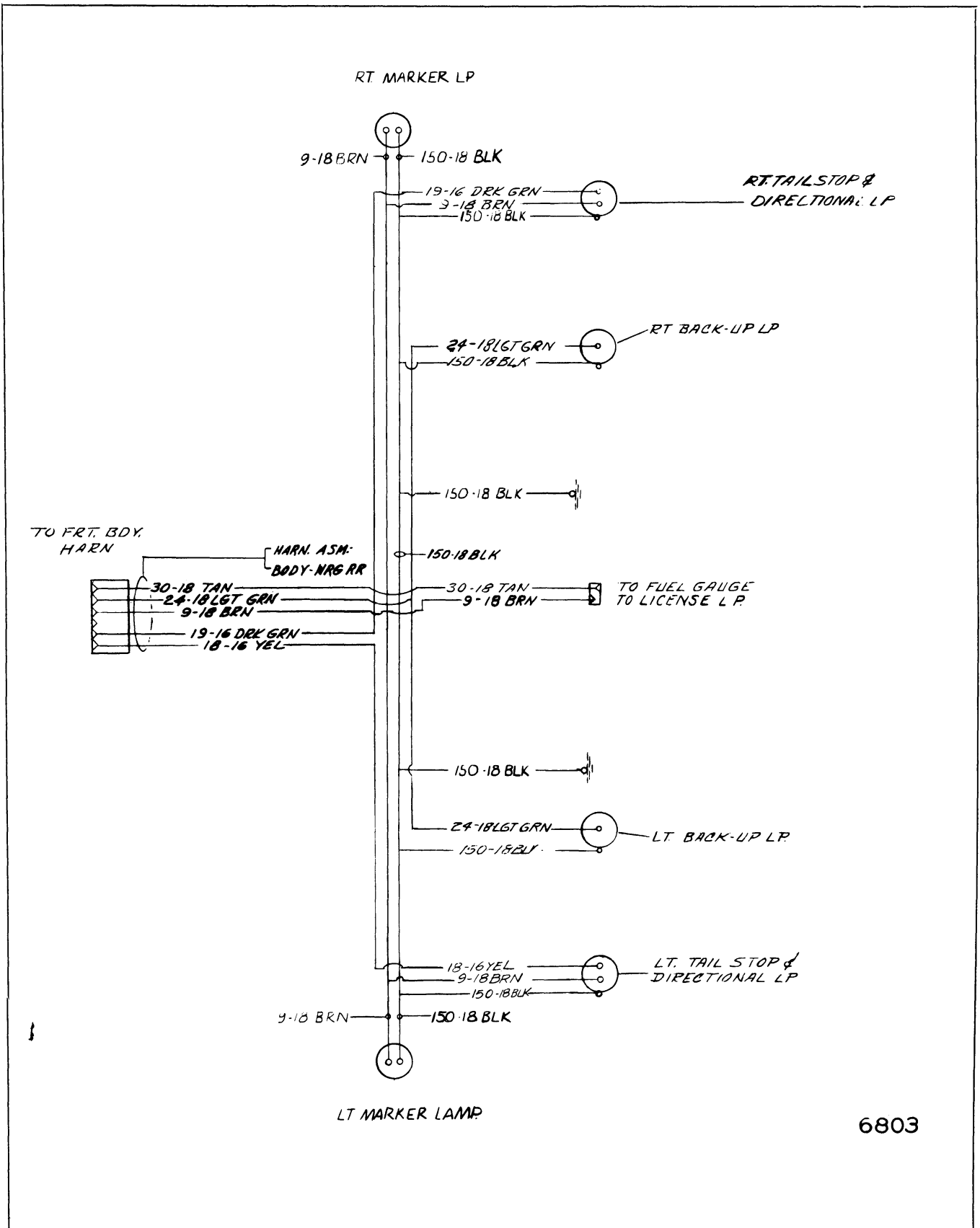
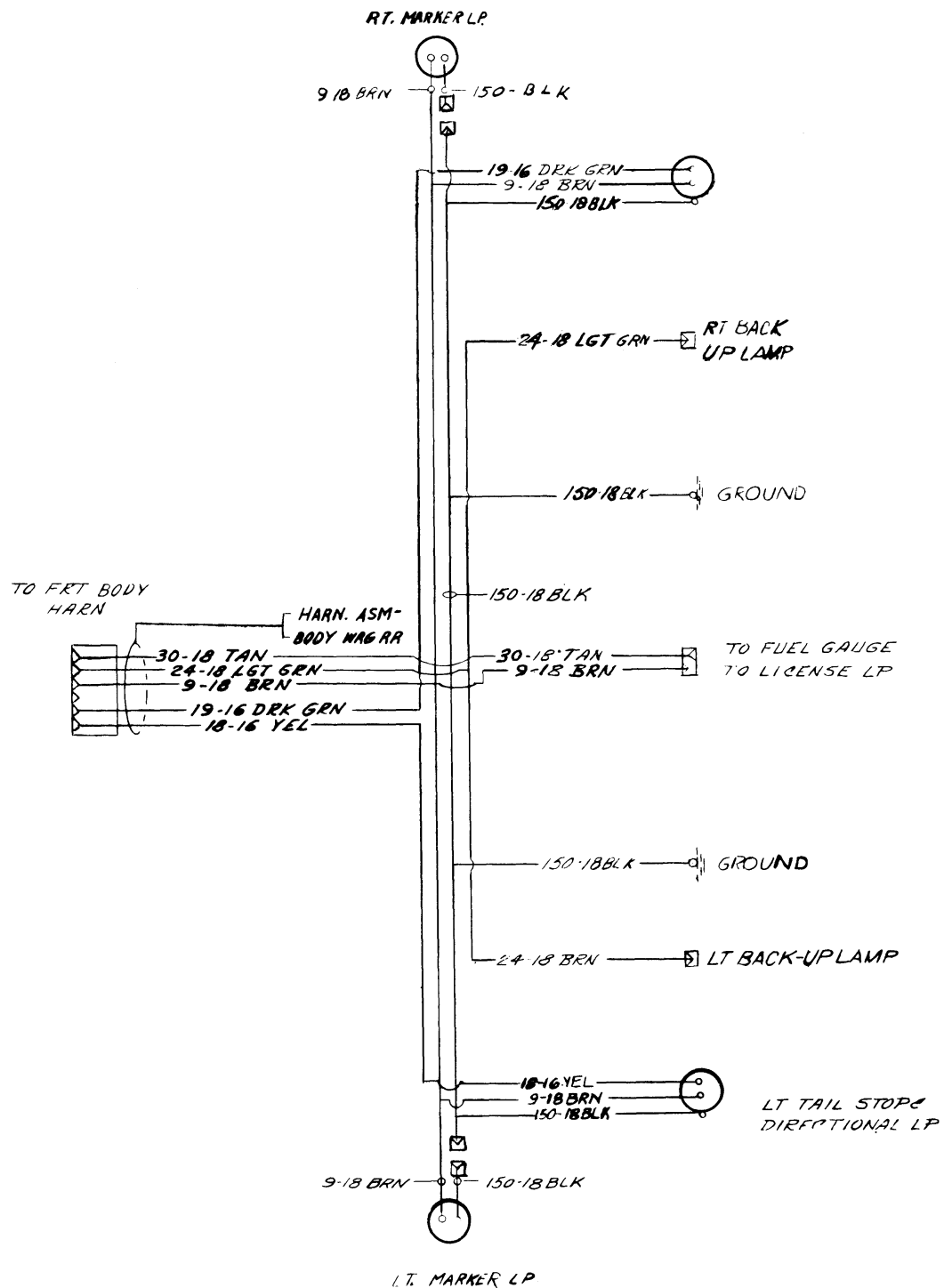


Fig. 10-62-Rear Harness Circuit Diagram - Chevrolet "A-29-37" Styles



6802

Fig. 10-63-Rear Harness Circuit Diagram - Chevrolet "A-57" Styles

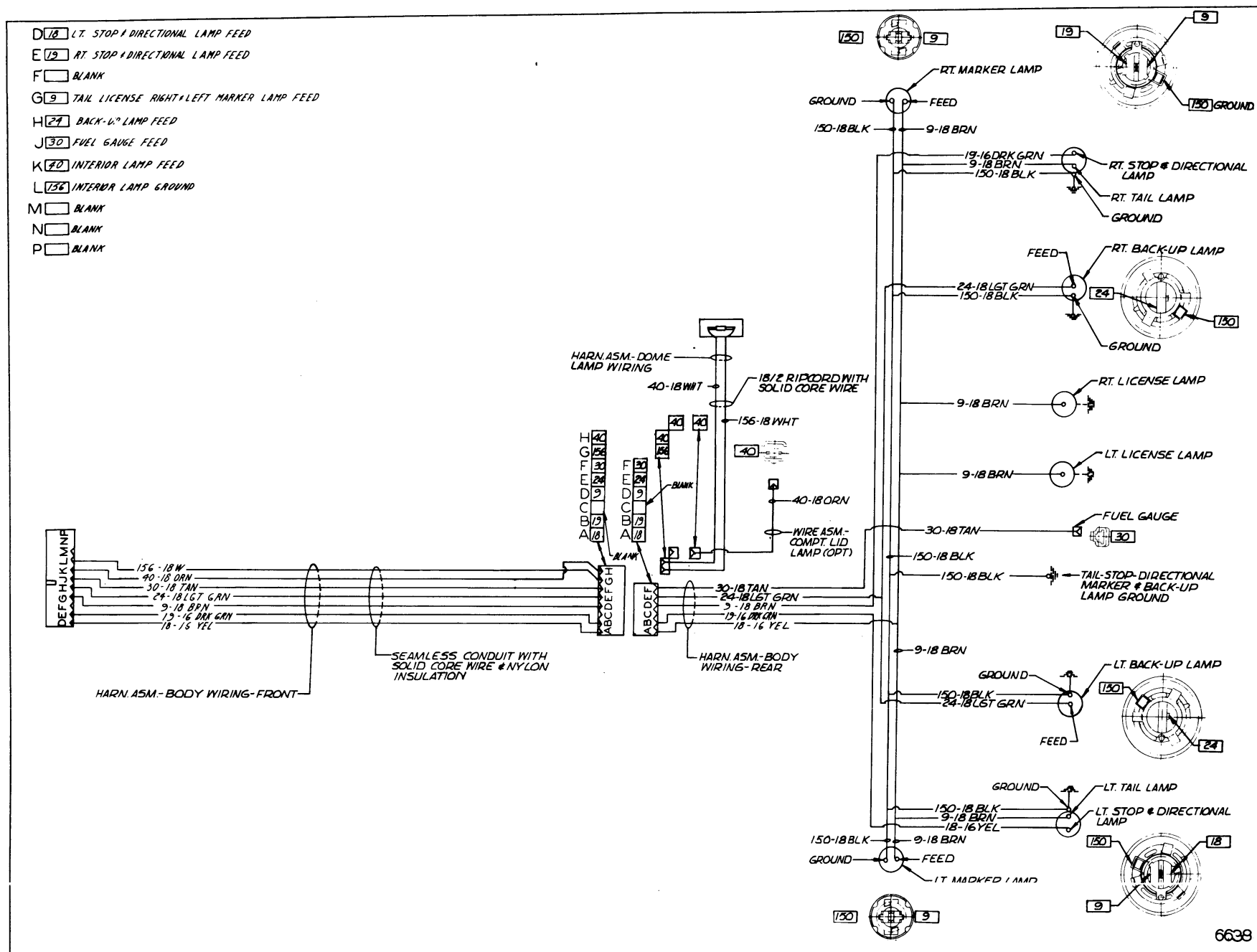


Fig. 10-64-Harness Circuit Diagram - Chevrolet "F" Styles

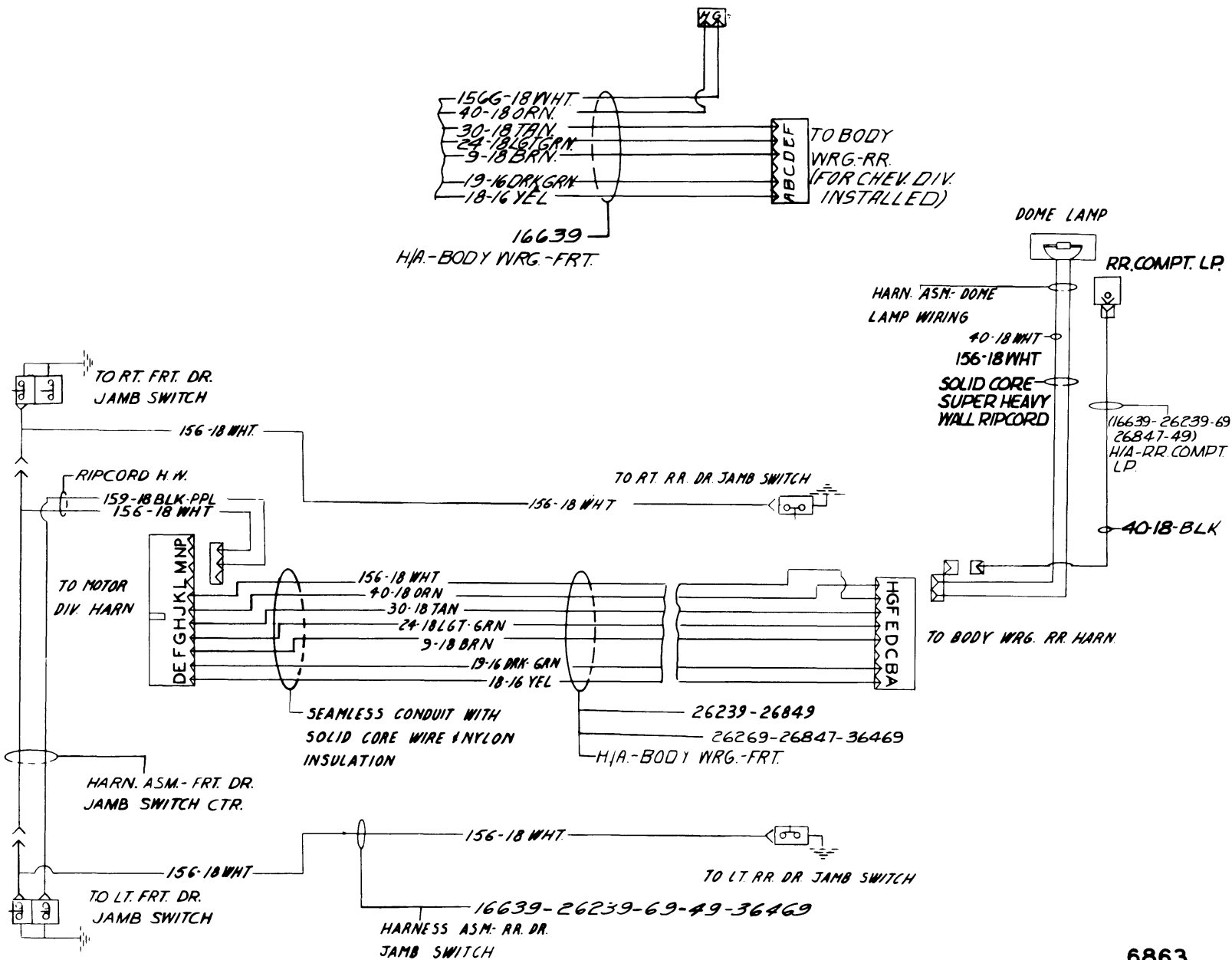
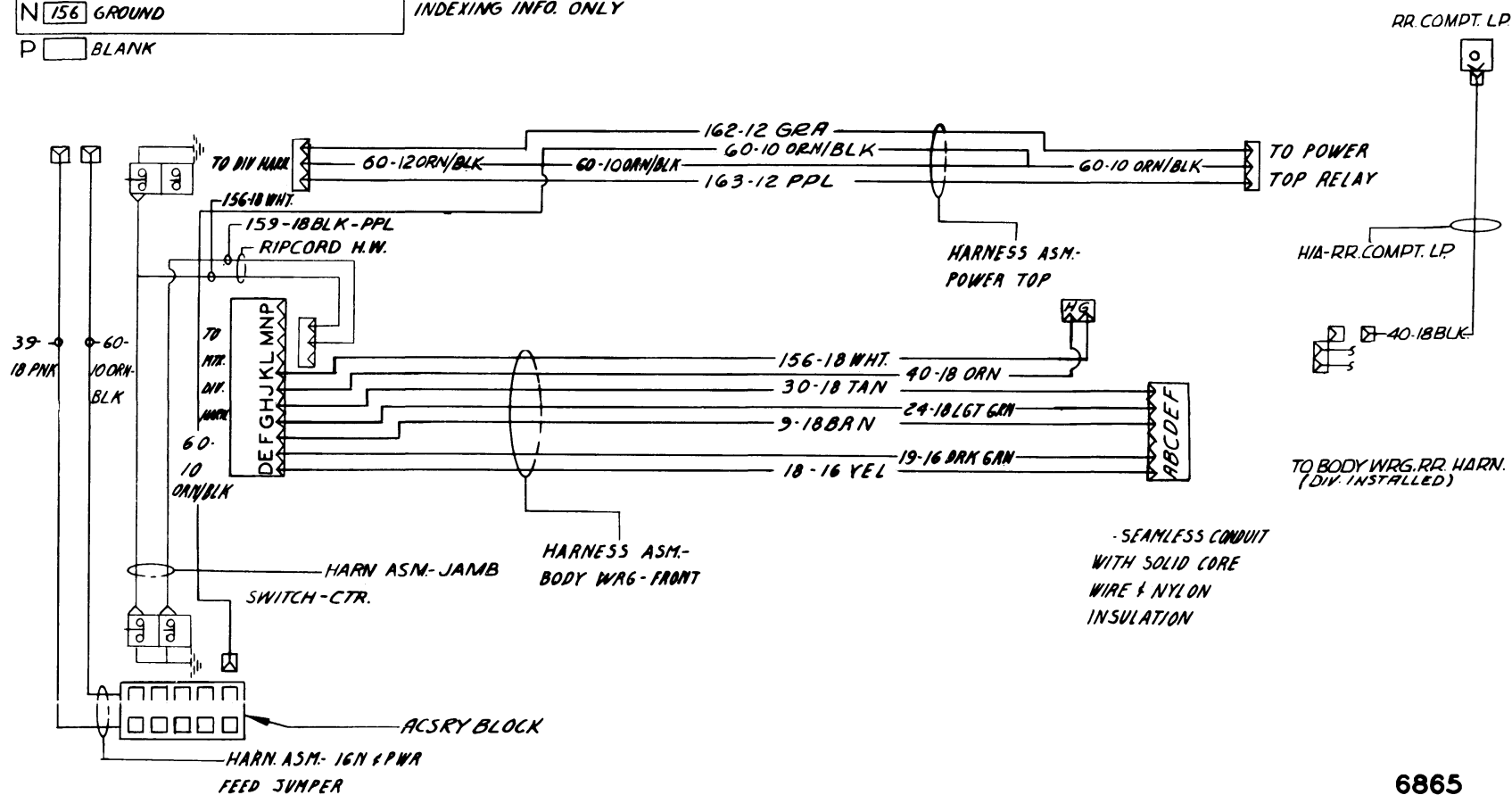


Fig. 10-65-Front Harness Circuit Diagram - Chevrolet "B" Styles, Less Station Wagon and Convertible

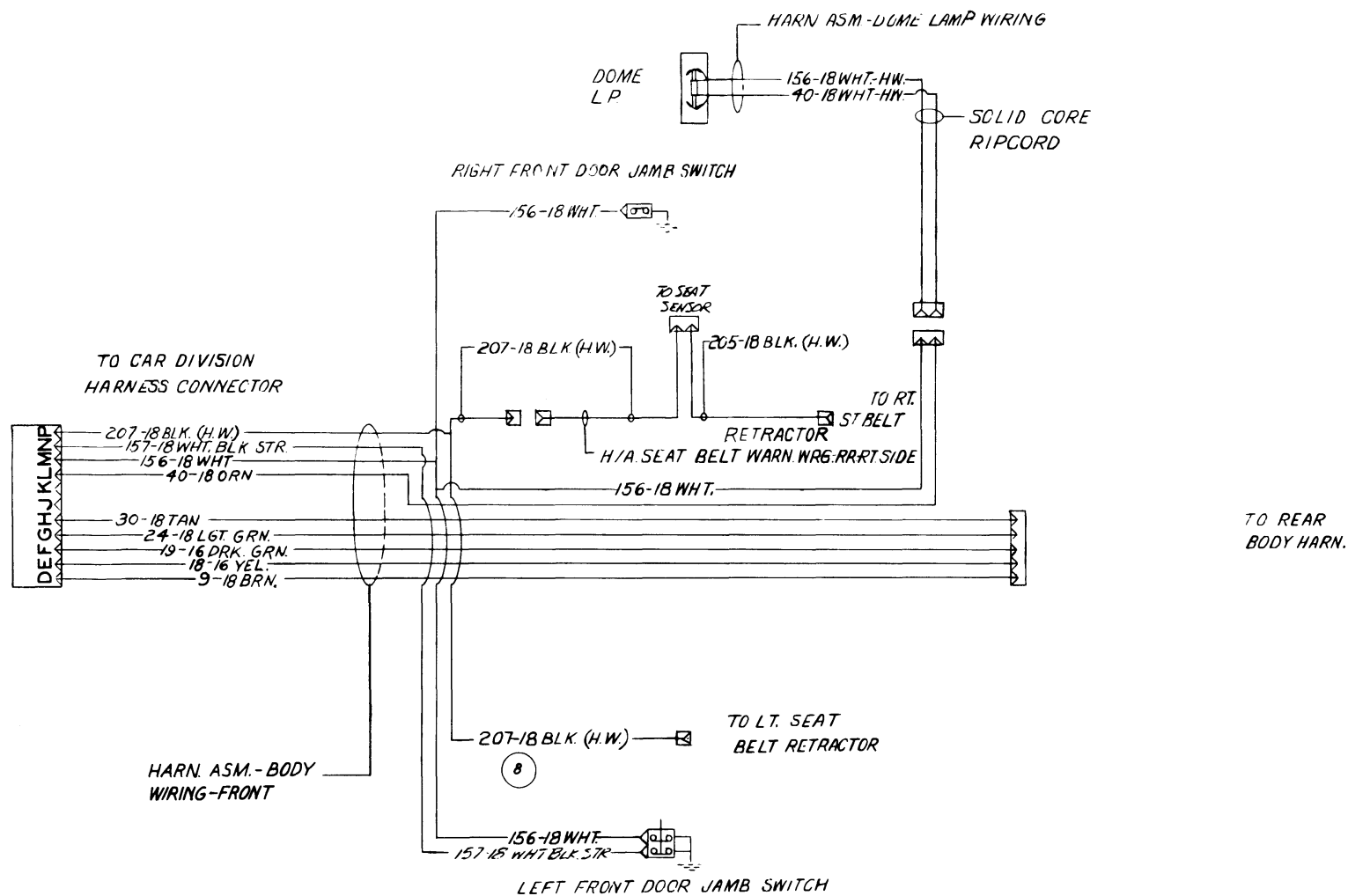
- D 18 LT. STOP & DIRECTIONAL LAMP FEED  
 E 19 RT. STOP & DIRECTIONAL LAMP FEED  
 F 9 TAIL, LICENSE, RT. & LT. MARKER LAMP FEED  
 G 24 BACK-UP LAMP FEED  
 H 30 FUEL GAUGE FEED  
 J 40 INTERIOR LAMP FEED  
 K 156 INTERIOR LAMP GROUND  
 L 40 FEED-BATTERY-FUSE PROTECTED  
 M 159 KEY WARNING BUZZER  
 N 156 GROUND  
 P BLANK

TERMINALS NOT PART OF CONN.  
 SHOWN FOR MOTOR DIVISION  
 INDEXING INFO. ONLY



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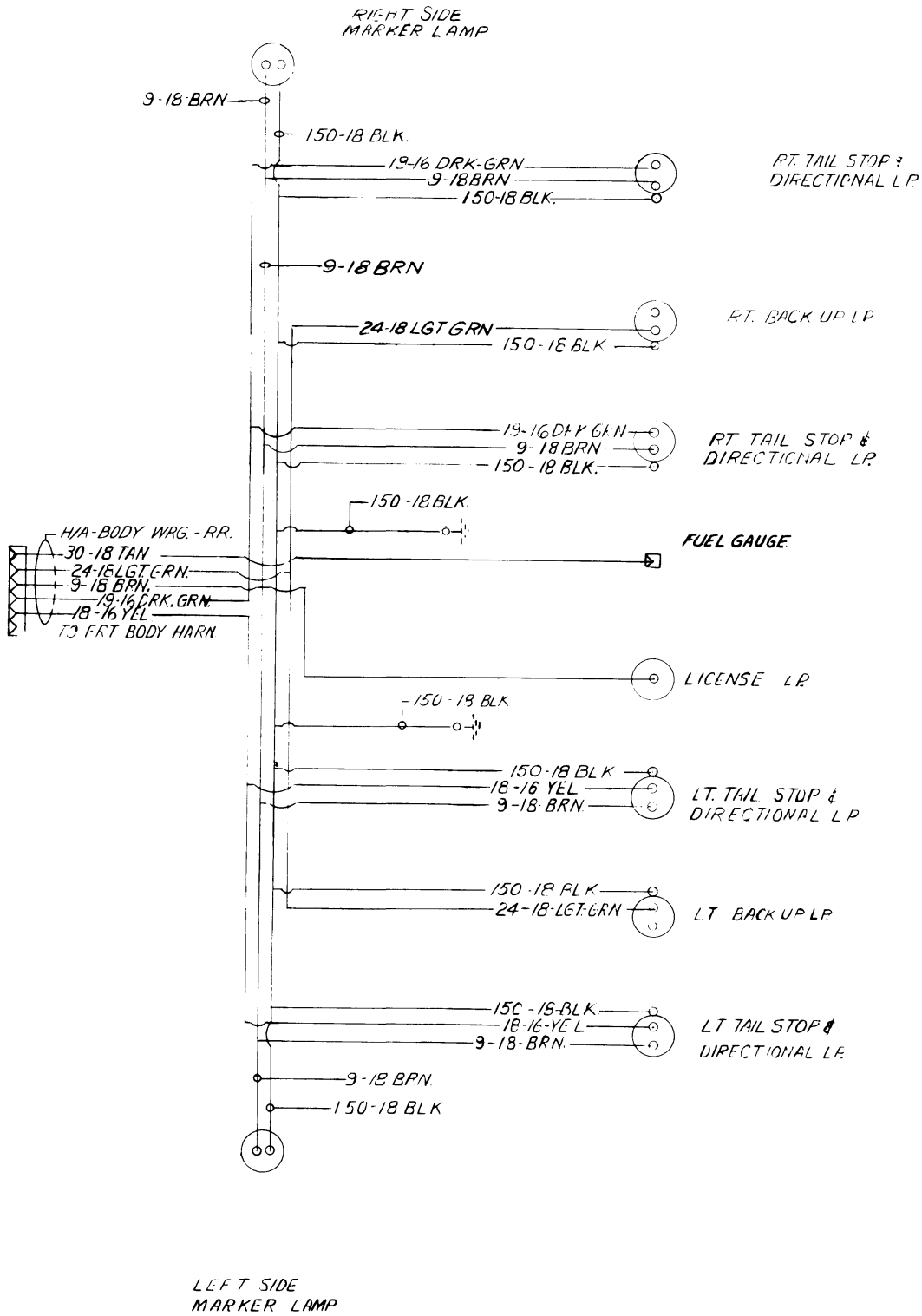
Fig. 10-66-Front Harness Circuit Diagram - Chevrolet "B-67" Style



7201

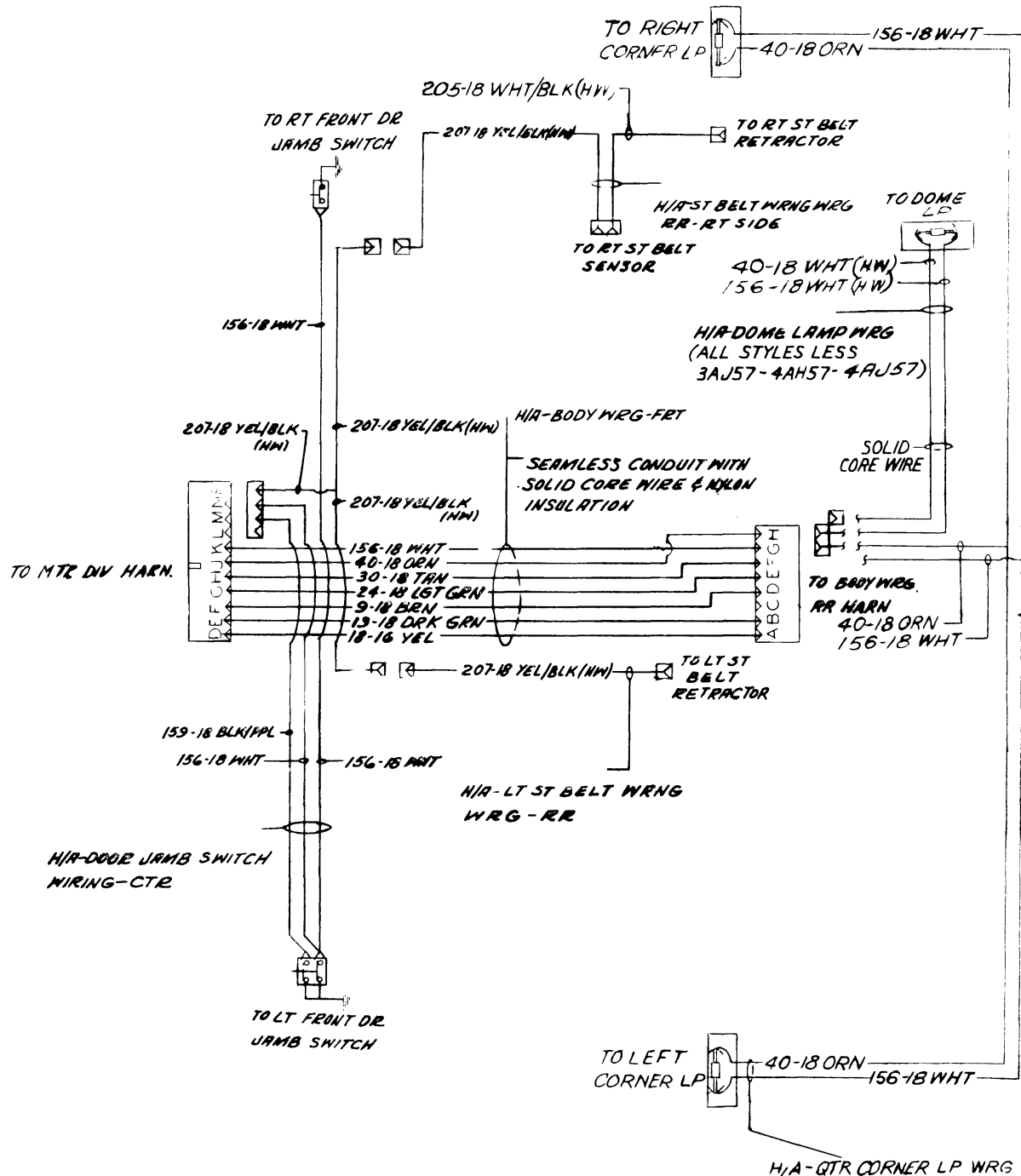
Fig. 10-67-Front Harness Circuit Diagram - Pontiac "X" Styles





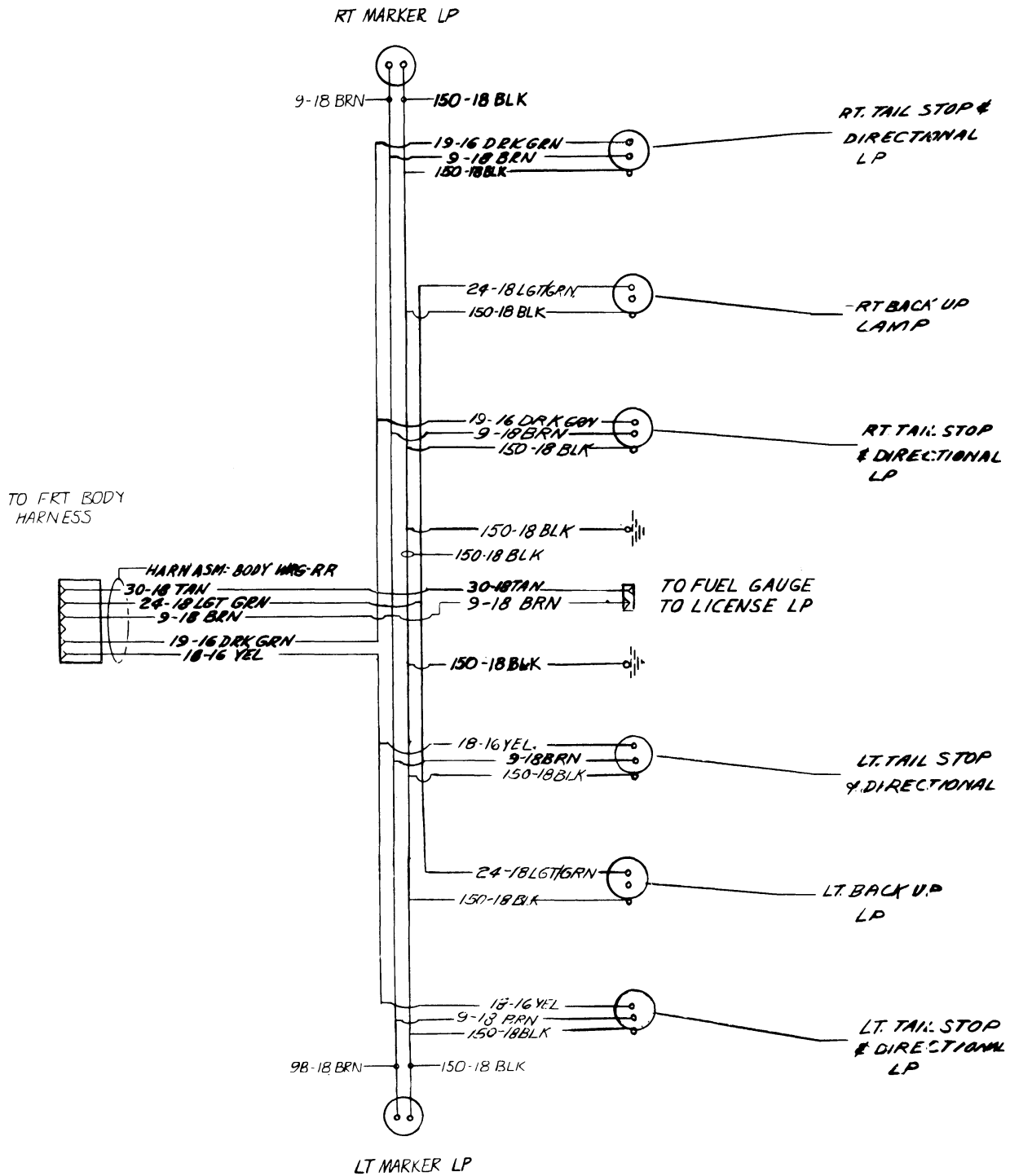
7204

Fig. 10-68-Rear Harness Circuit Diagram - Pontiac "X" Styles



6834

Fig. 10-69-Front Harness Circuit Diagram - Pontiac "A-29-37-57" Styles



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Fig. 10-70-Rear Harness Circuit Diagram - Pontiac "A-29-37" Styles

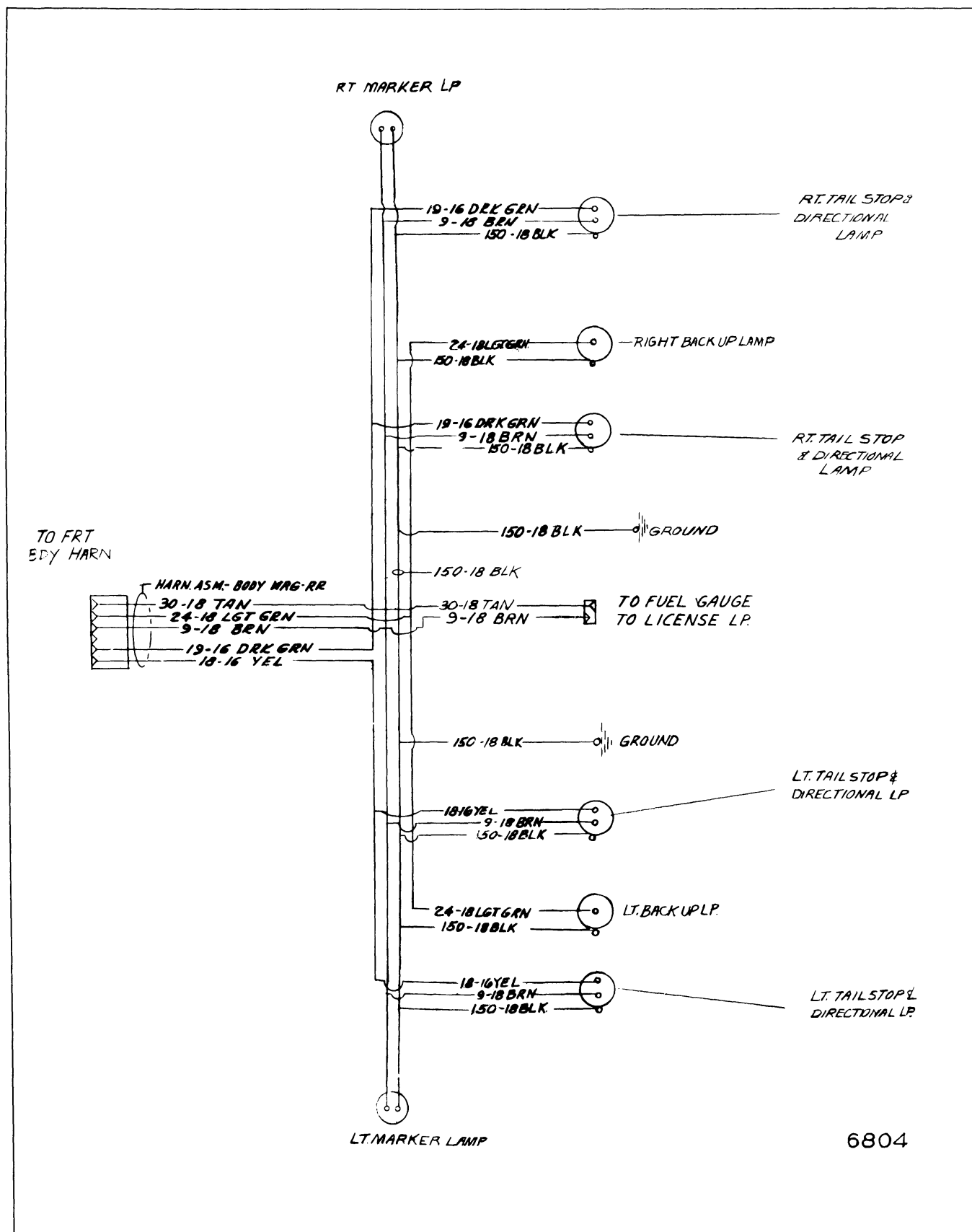


Fig. 10-71-Rear Harness Circuit Diagram - Pontiac "A-57" Style

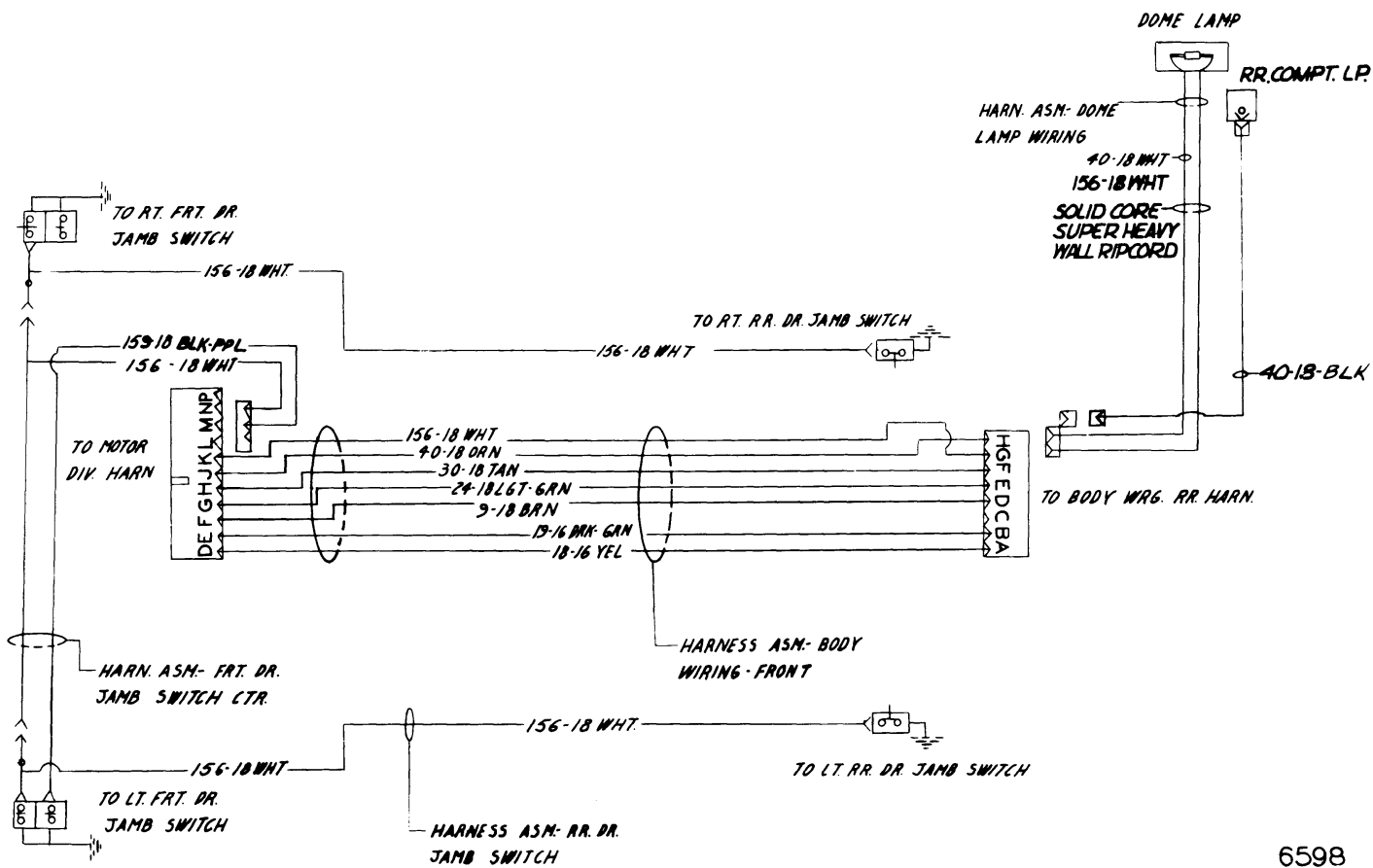


Fig. 10-72-Front Harness Circuit Diagram - Pontiac "B" Styles, Less Station Wagon and Convertible

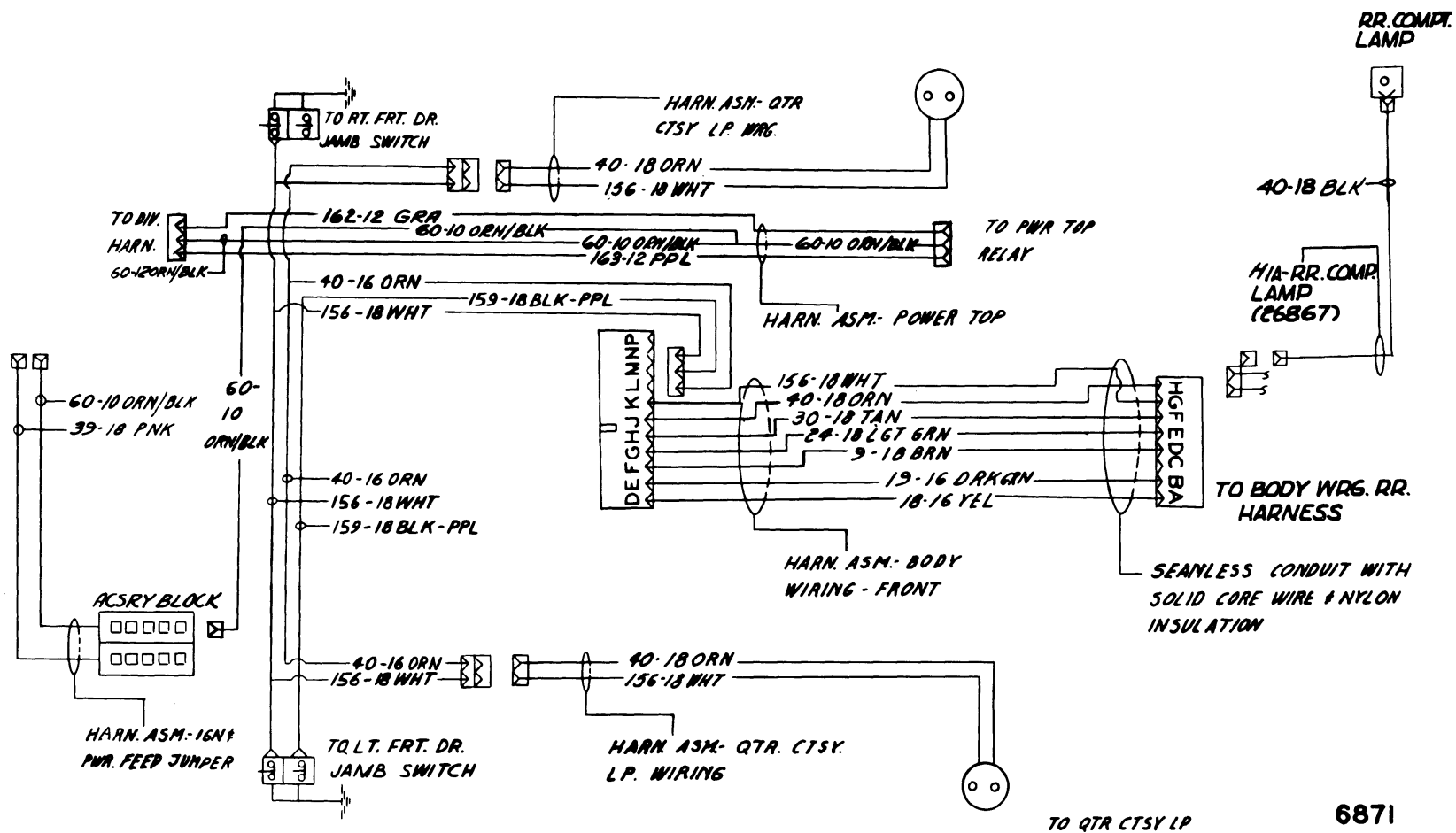


Fig. 10-73-Front Harness Circuit Diagram - Pontiac "B-67" Styles

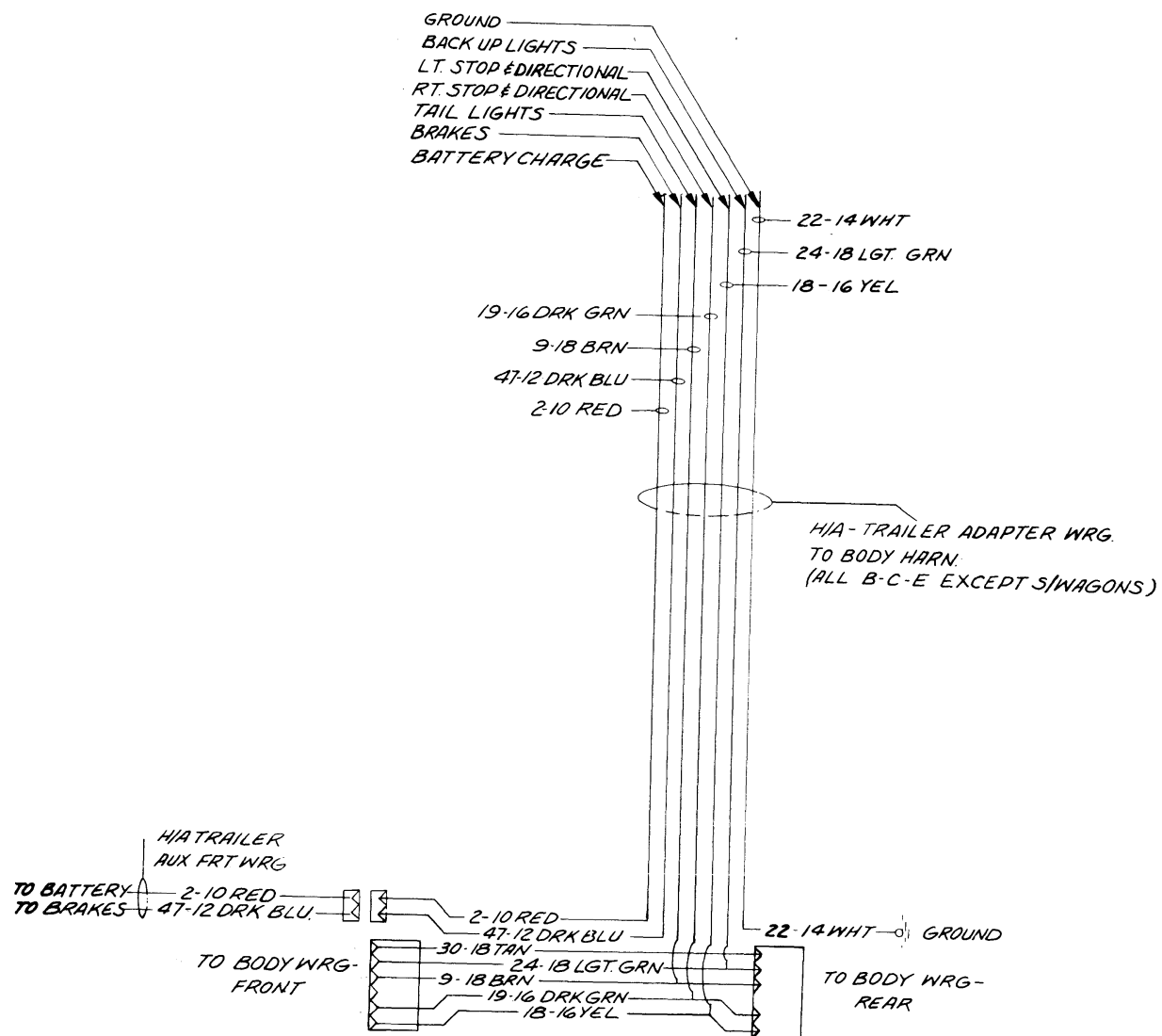


**Fig. 10-74-Rear Harness Circuit Diagram - Pontiac "B" Styles**



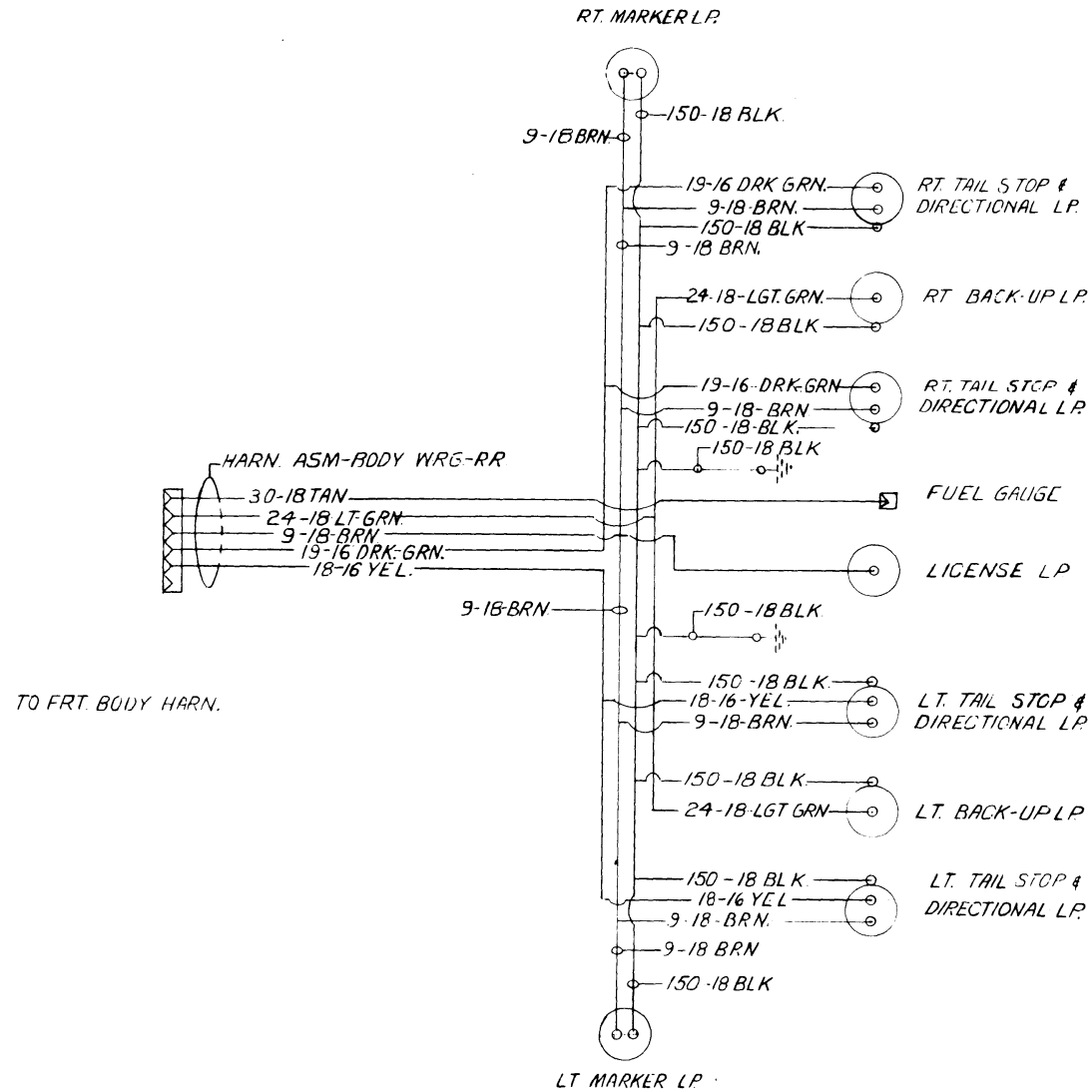
ELECTRICAL 10-81





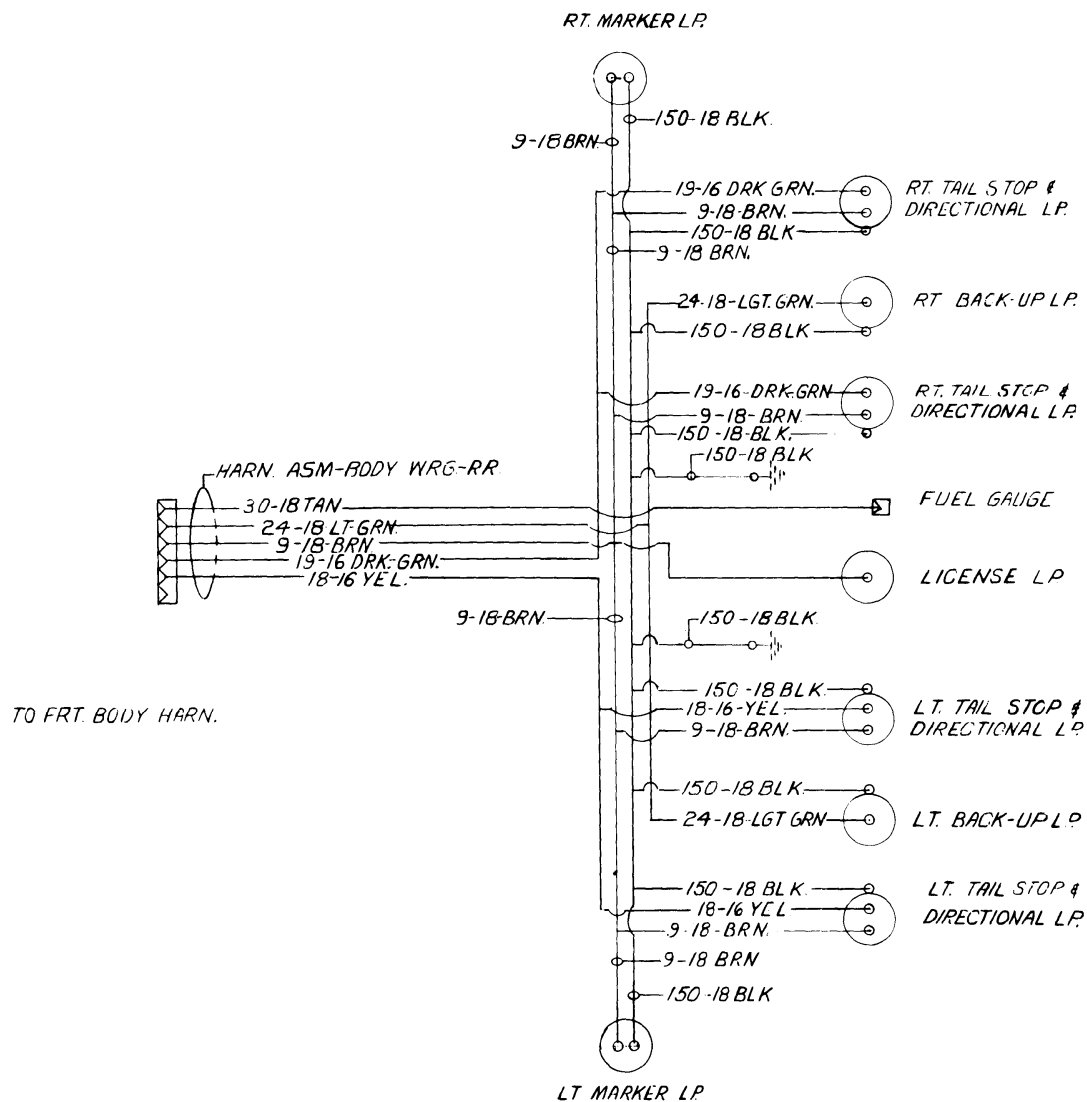
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Fig. 10-76-Trailer Adapter Harness Circuit Diagram - Pontiac "B" Styles



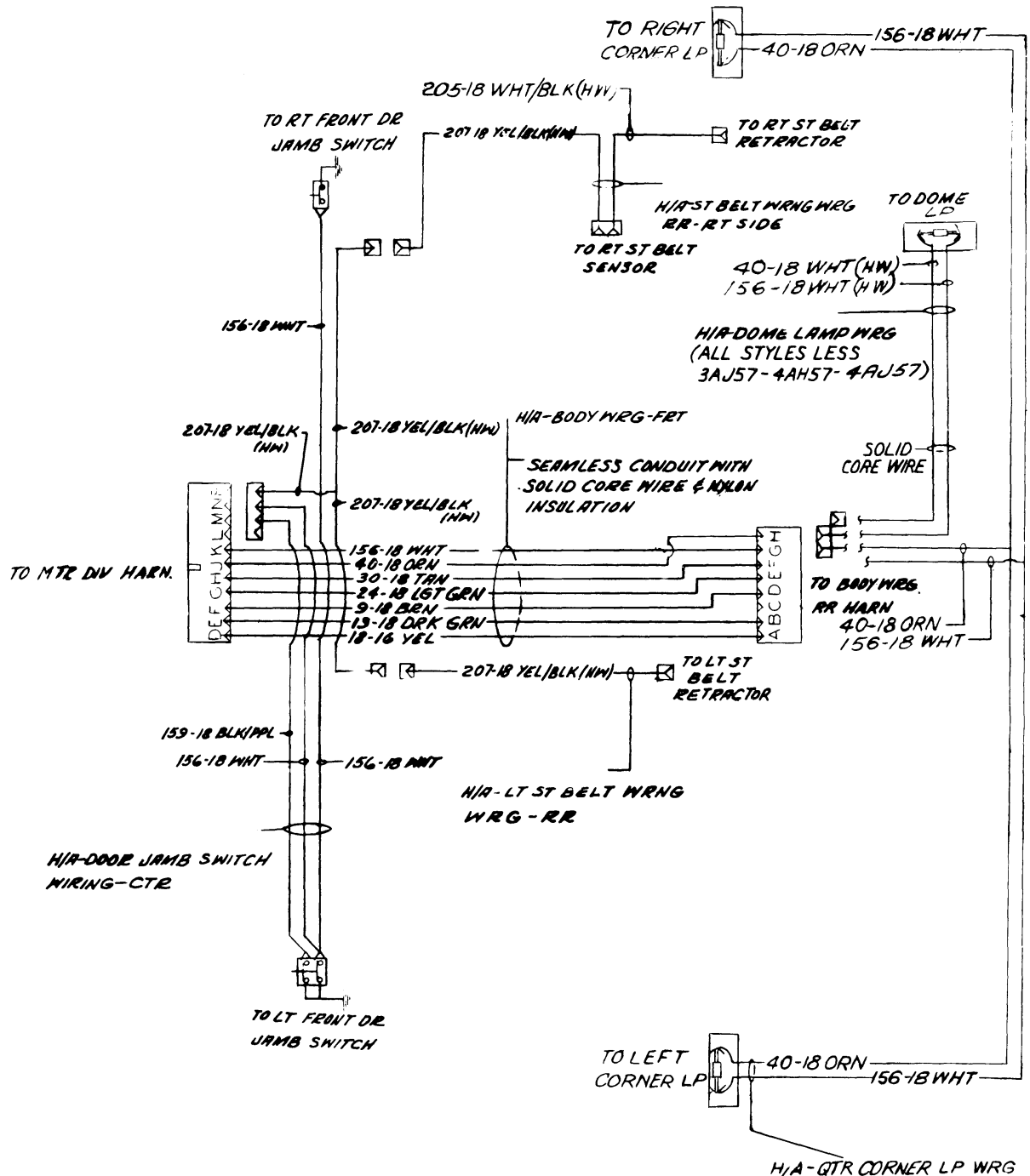
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Fig. 10-77-Front Harness Circuit Diagram - Oldsmobile "X" Styles



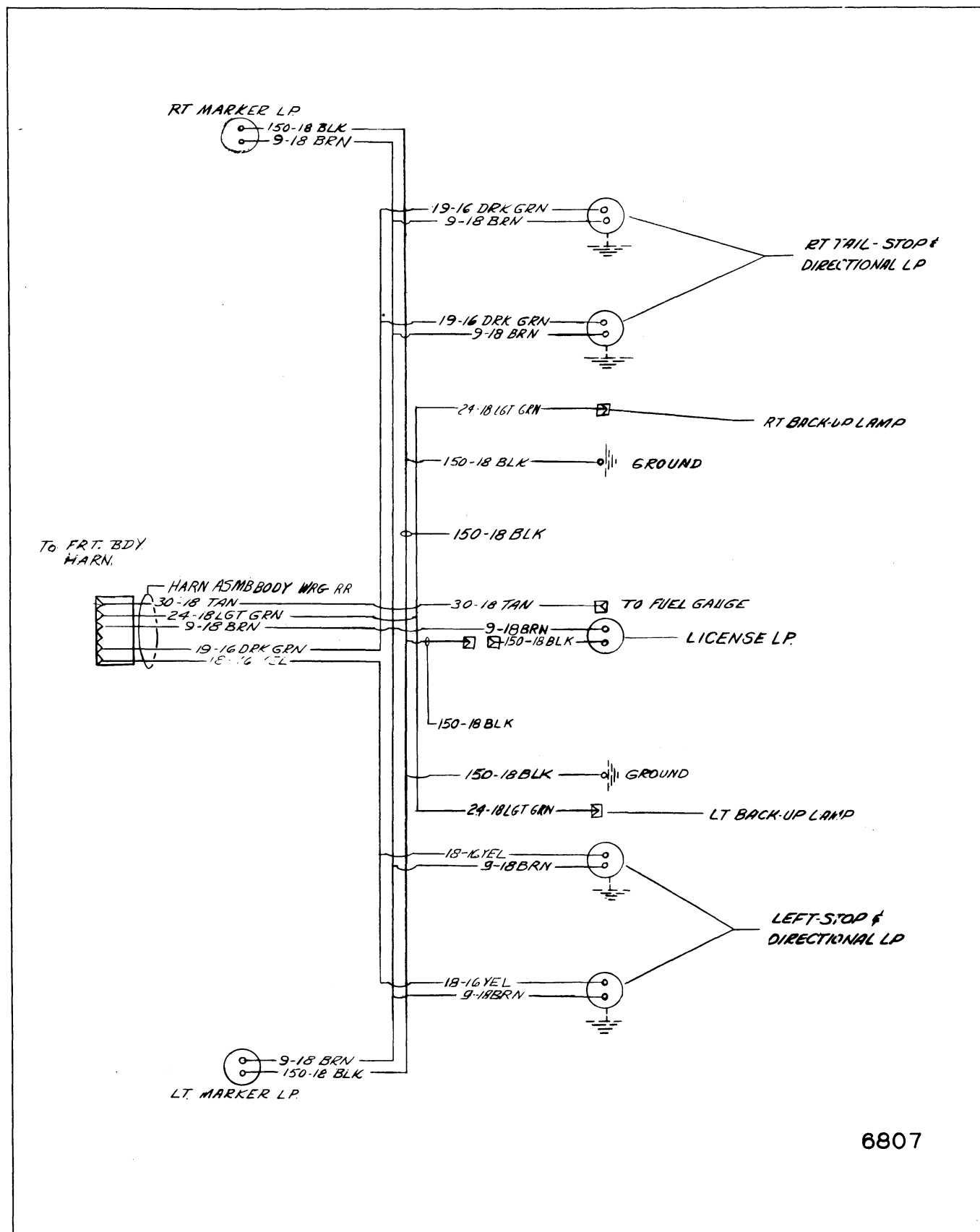
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Fig. 10-78-Rear Harness Circuit Diagram - Oldsmobile "X" Styles



6834

Fig. 10-79-Front Harness Circuit Diagram - Oldsmobile "A-29,37,57" Styles



6807

Fig. 10-80-Rear Harness Circuit Diagram - Oldsmobile "A-29-37-57" Styles

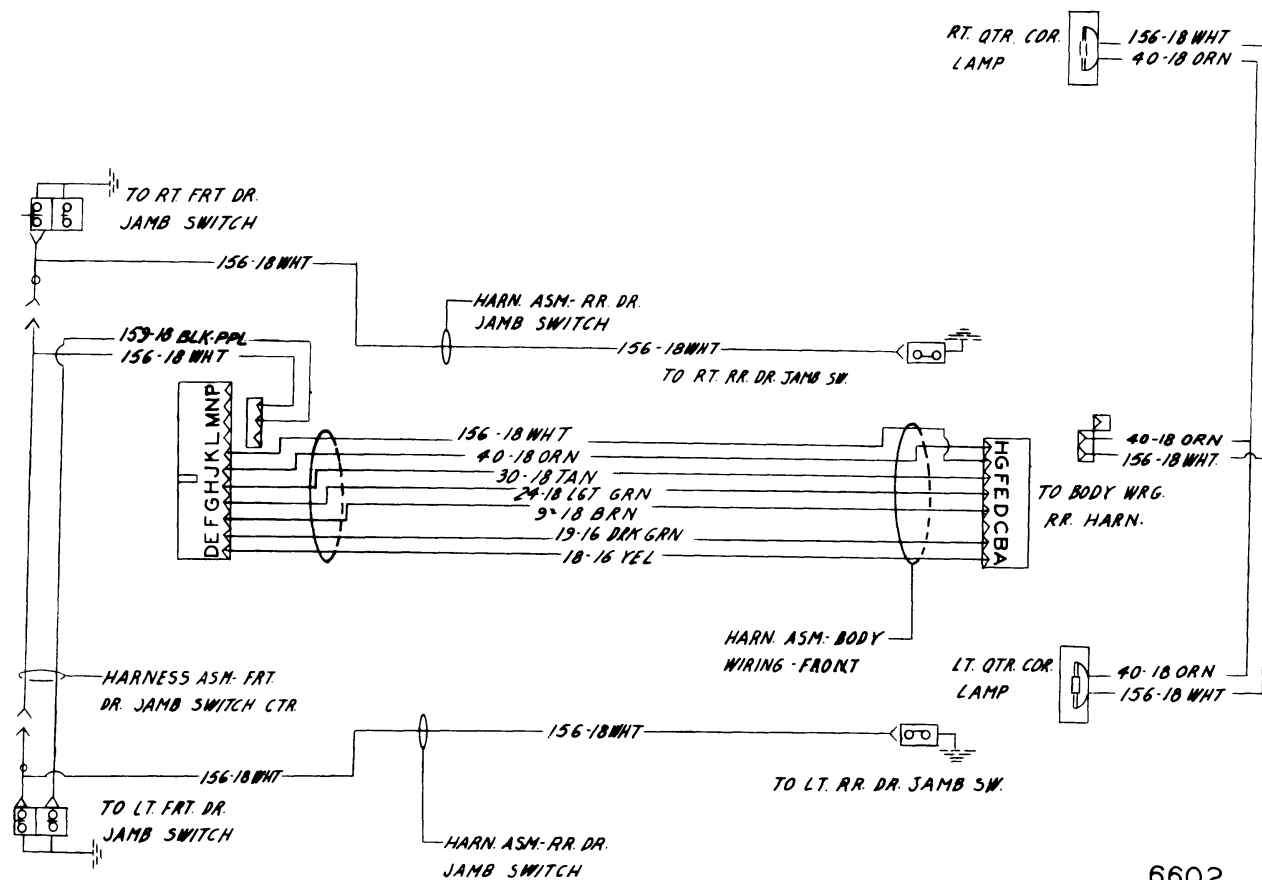


Fig. 10-81-Front Harness Circuit Diagram - Oldsmobile 36439 and 38439 Styles

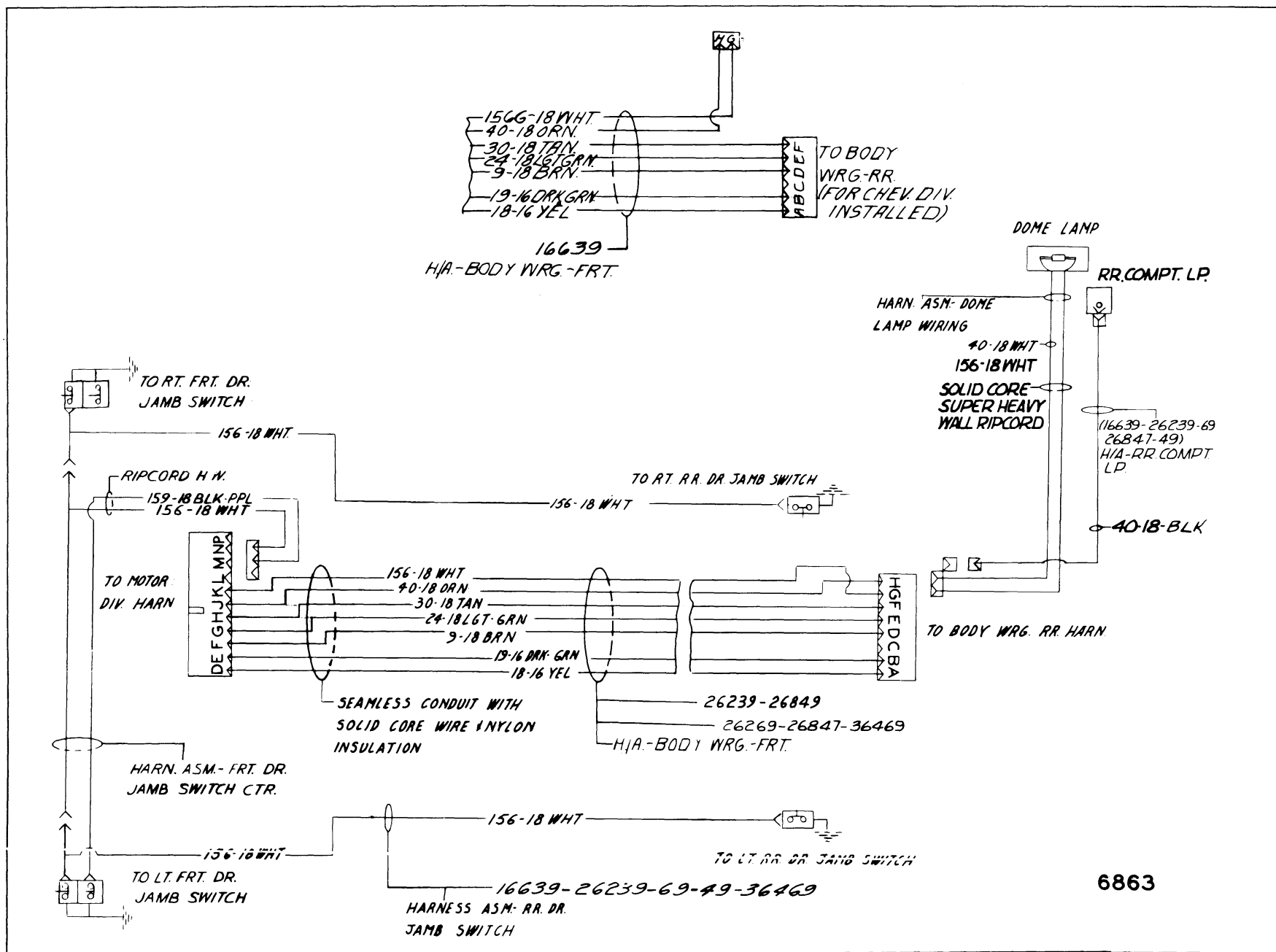


Fig. 10-82-Front Harness Circuit Diagram - Oldsmobile "B-39-47-57-69" Styles, Less 36439-57

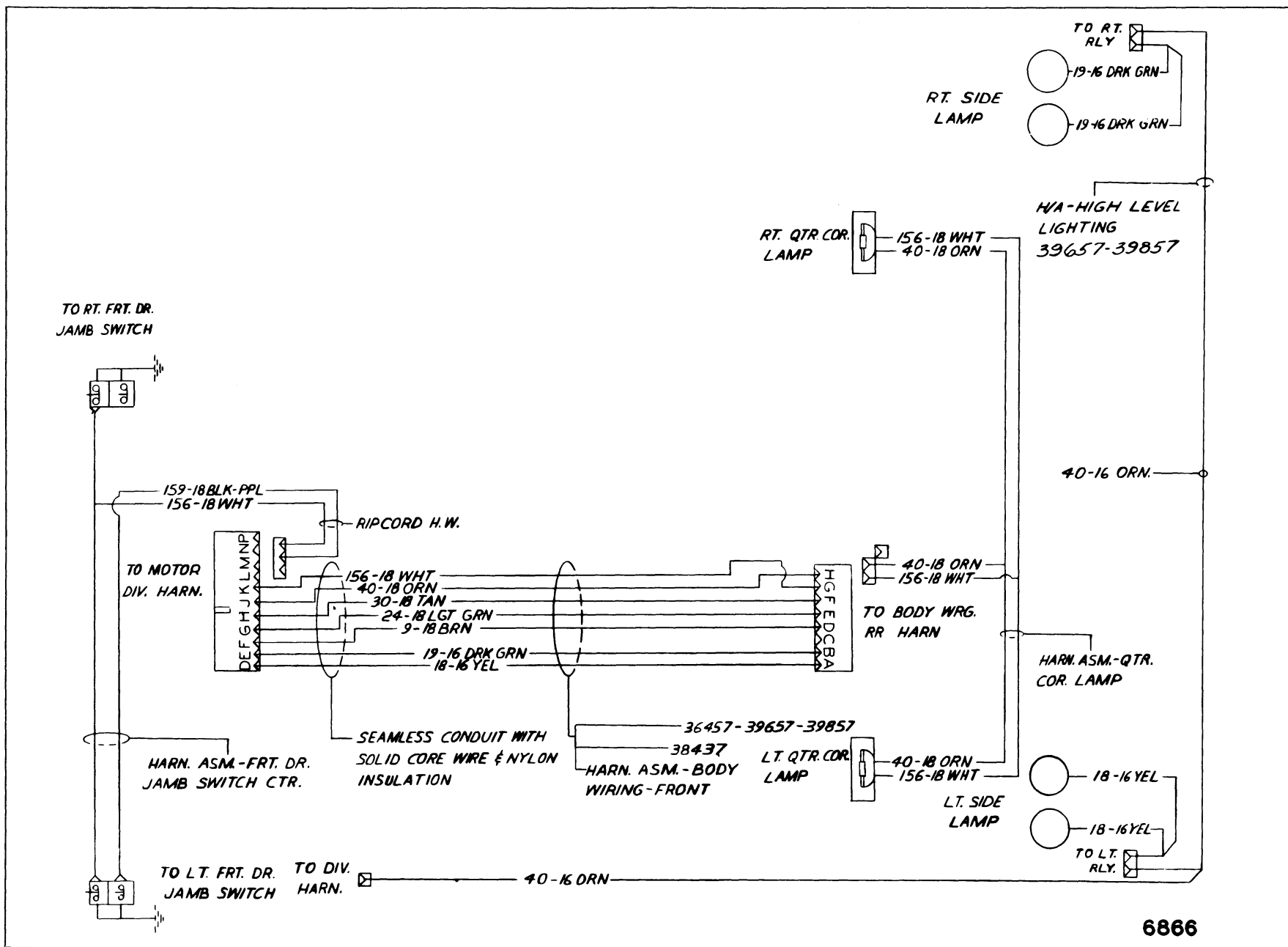


Fig. 10-83-Front Harness Circuit Diagram - Oldsmobile 36457-38437-39657-39857 Styles



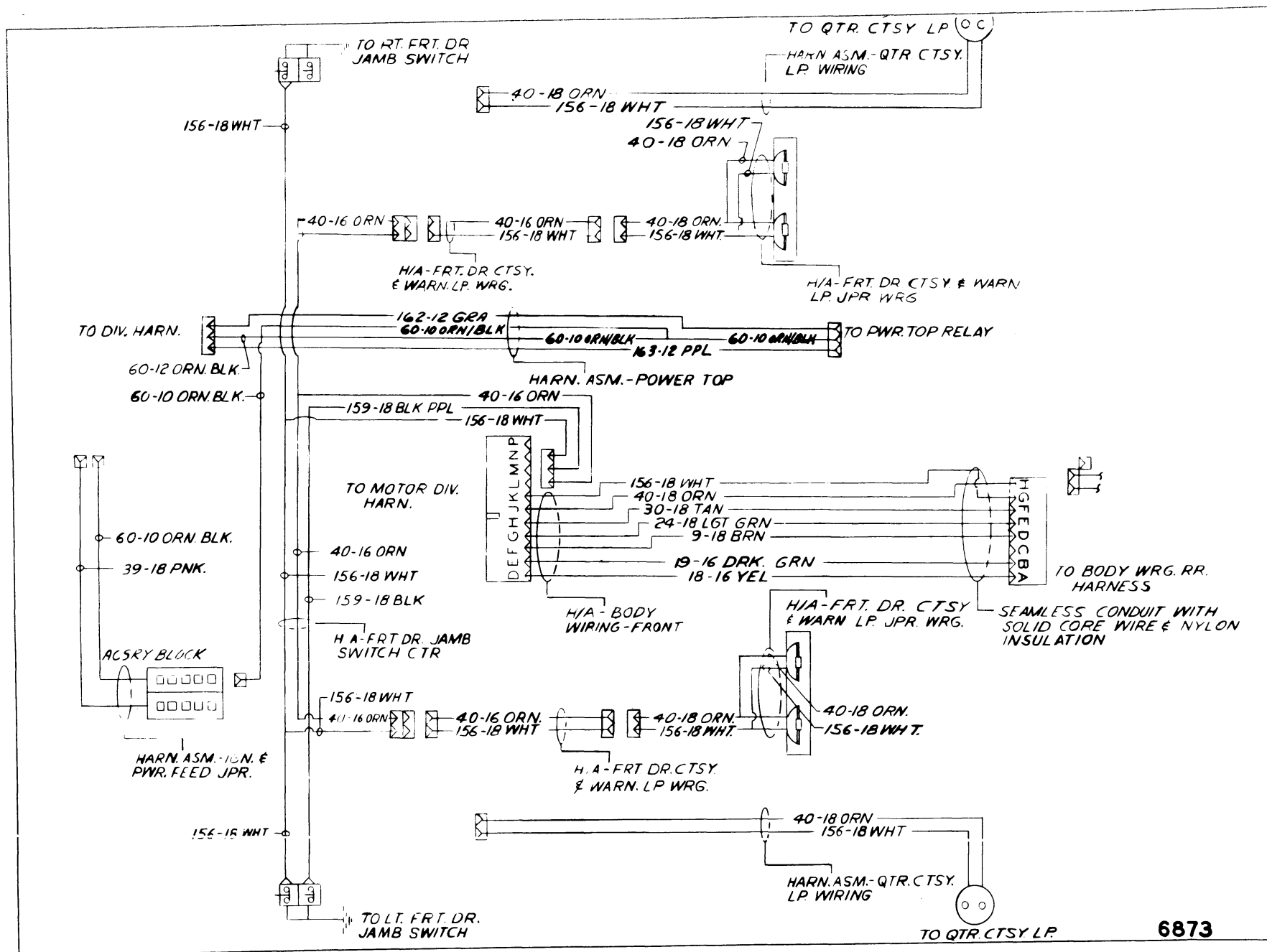
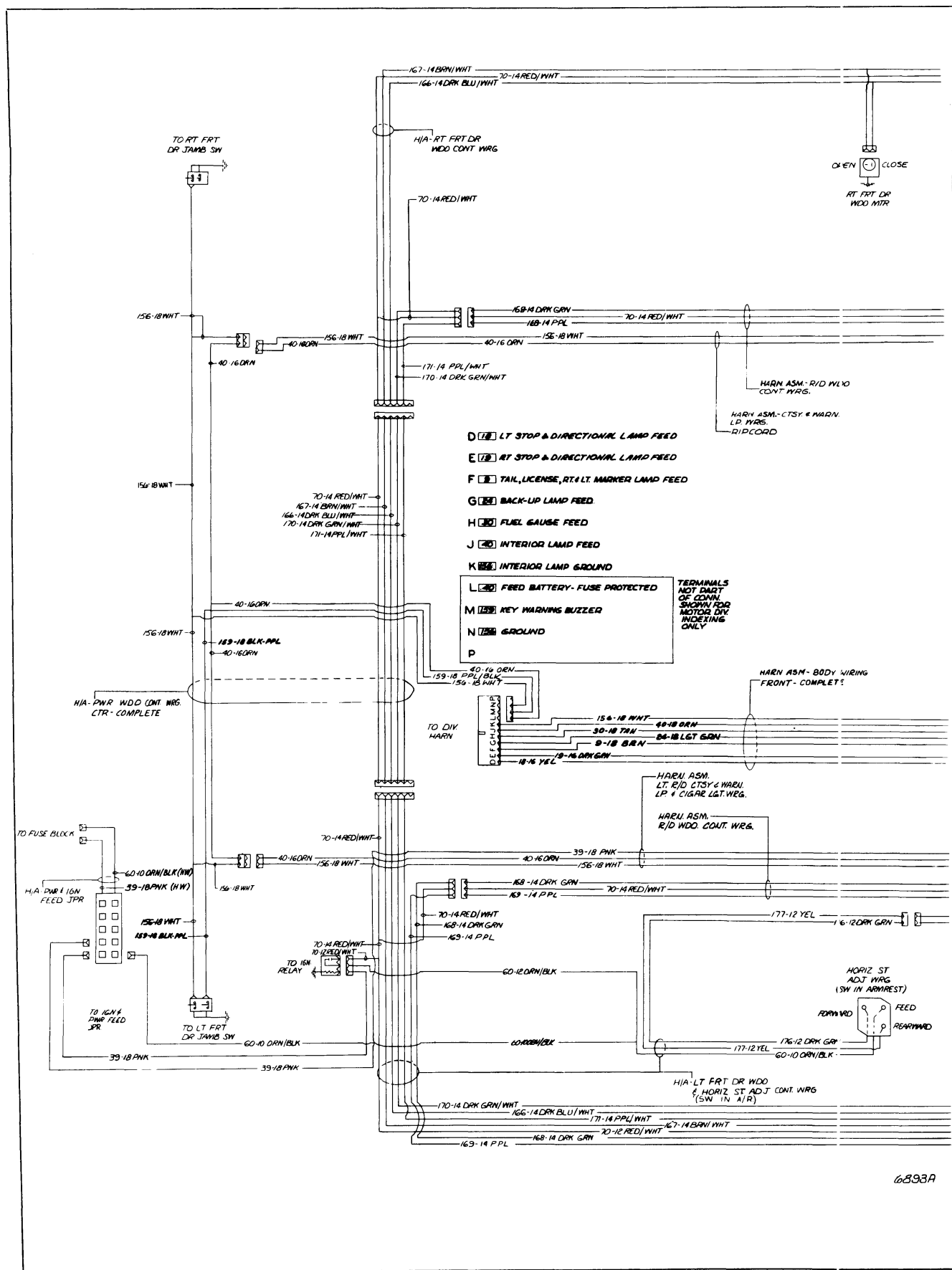


Fig. 10-84-Front Harness Circuit Diagram - Oldsmobile "B-67" Style





**Fig. 10-85-Front Half of Front Harness Circuit Diagram - Oldsmobile 38639 Style**

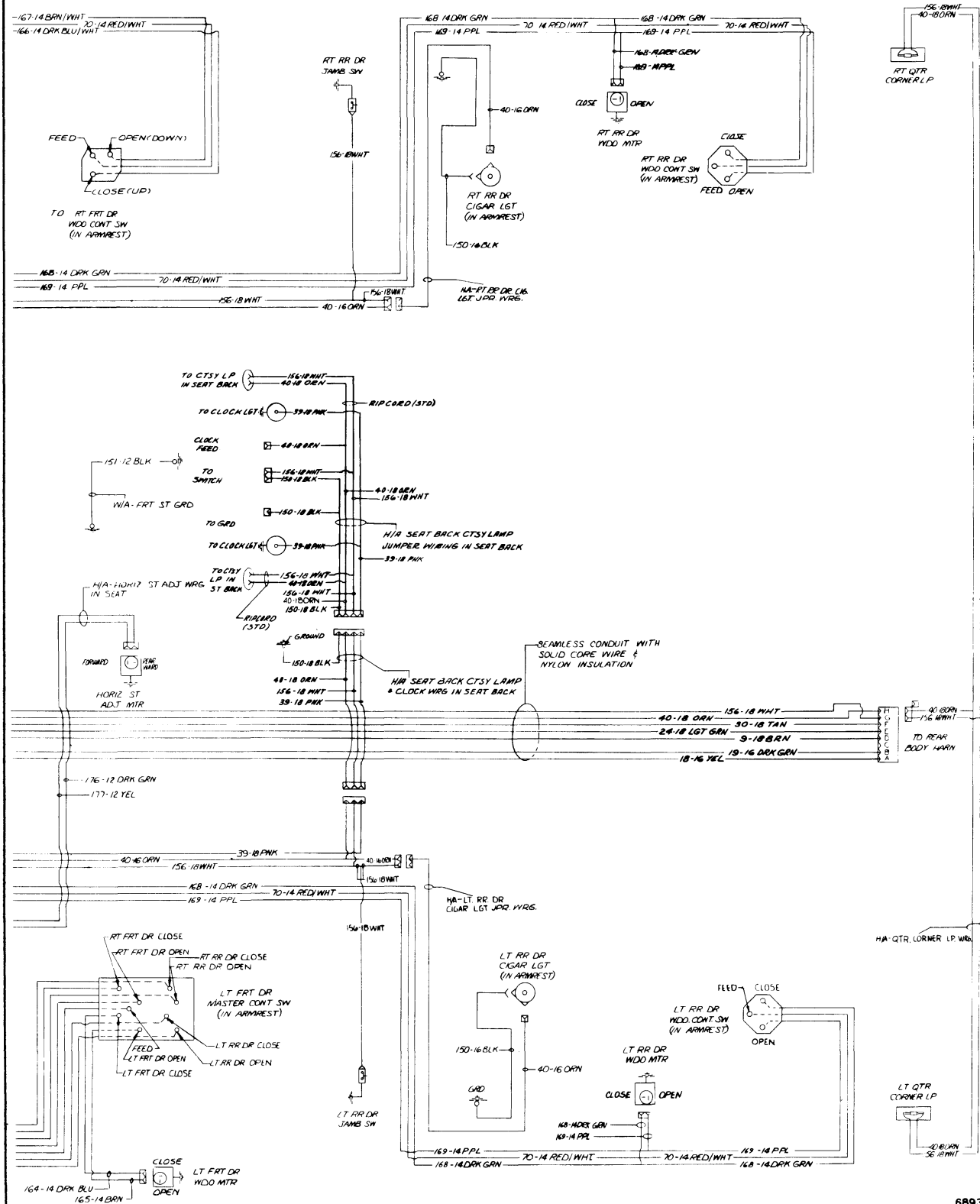


Fig. 10-86-Rear Half of Front Harness Circuit Diagram - Oldsmobile 38639 Style

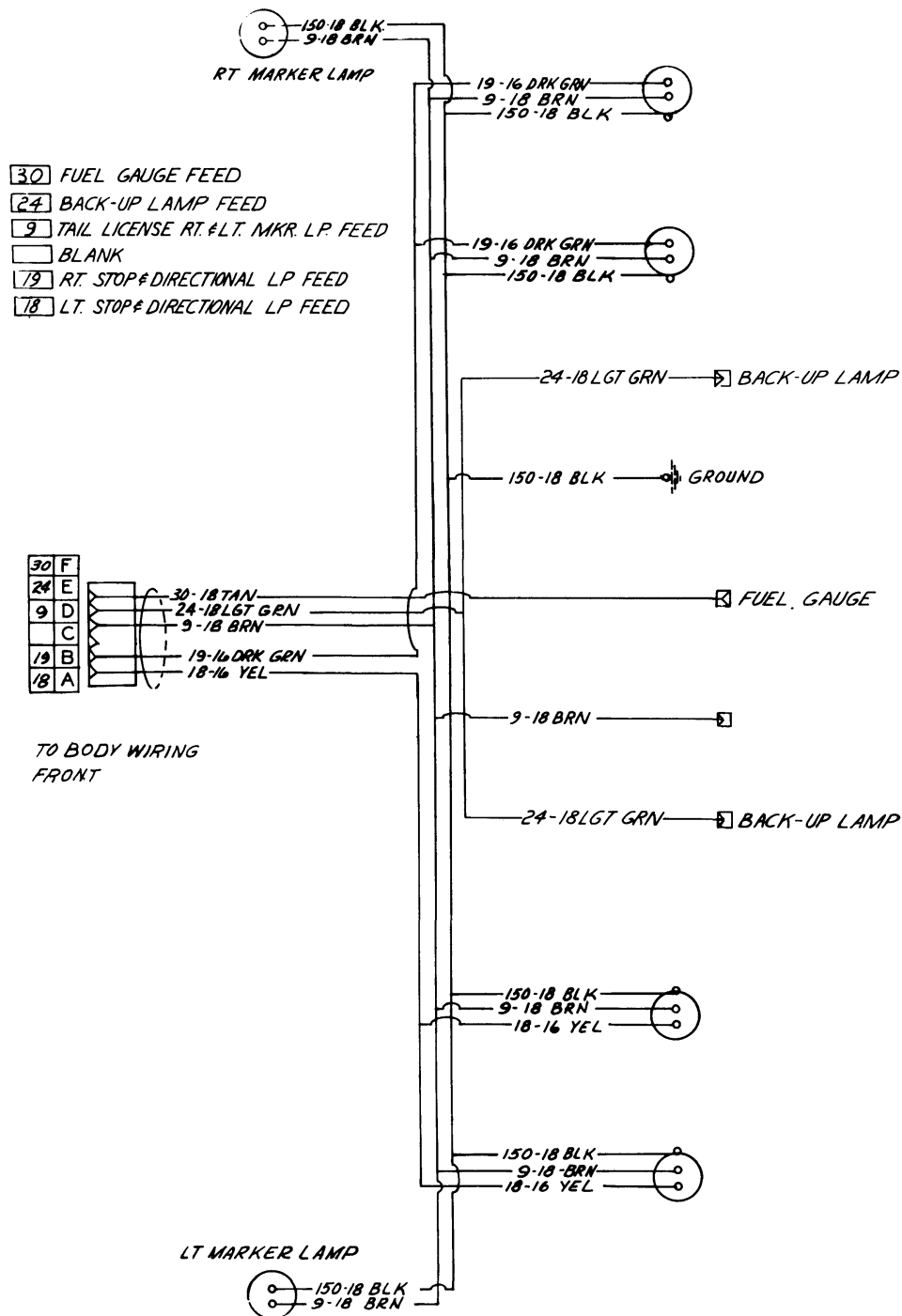
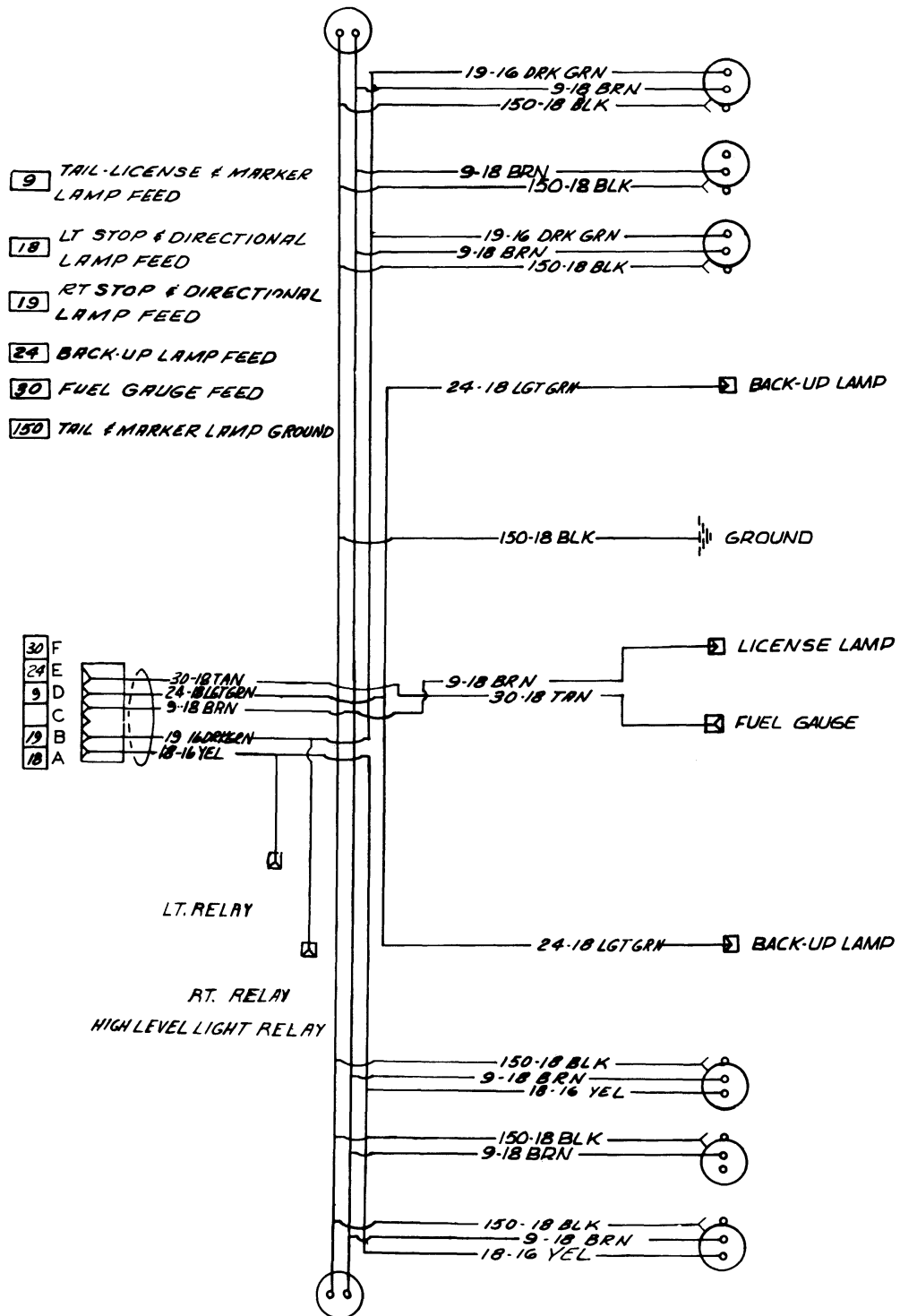
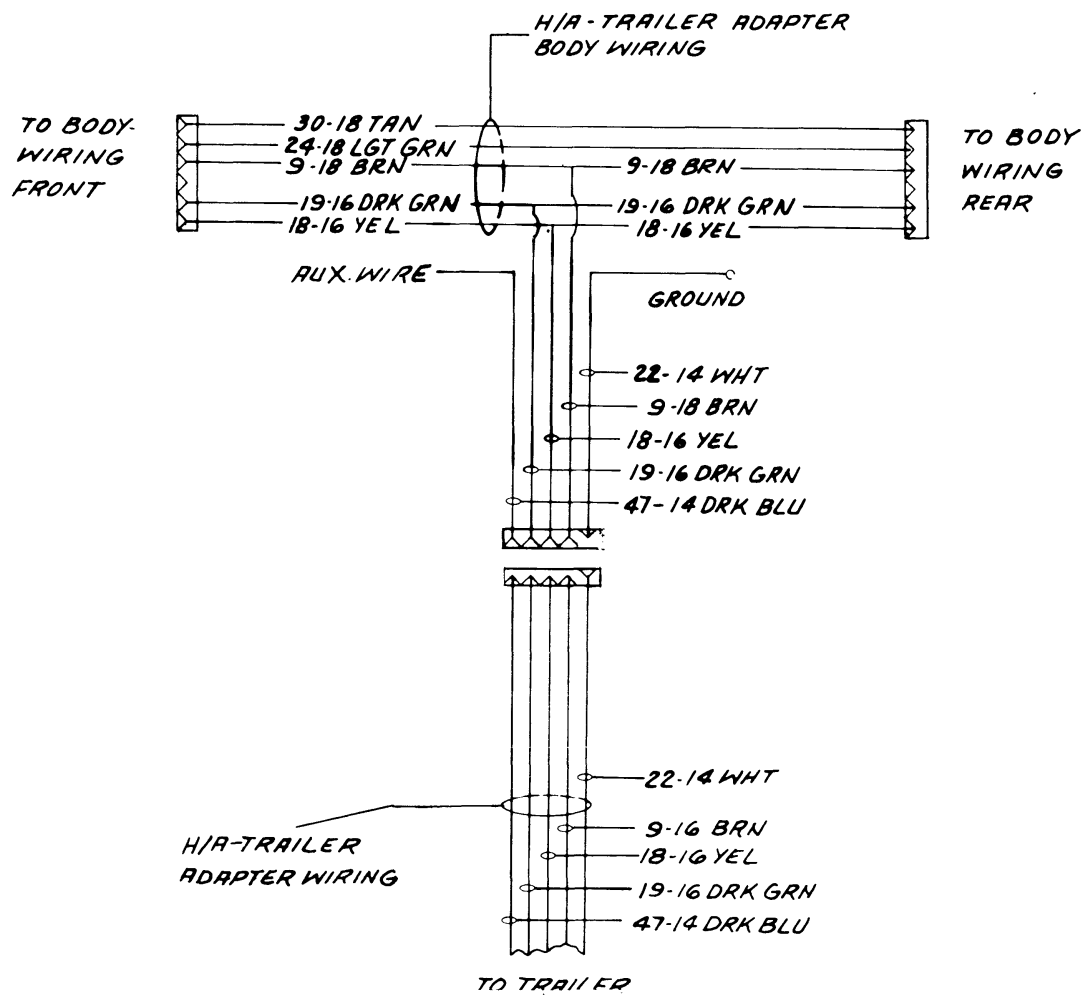


Fig. 10-87-Rear Harness Circuit Diagram - Oldsmobile "B-C" Styles



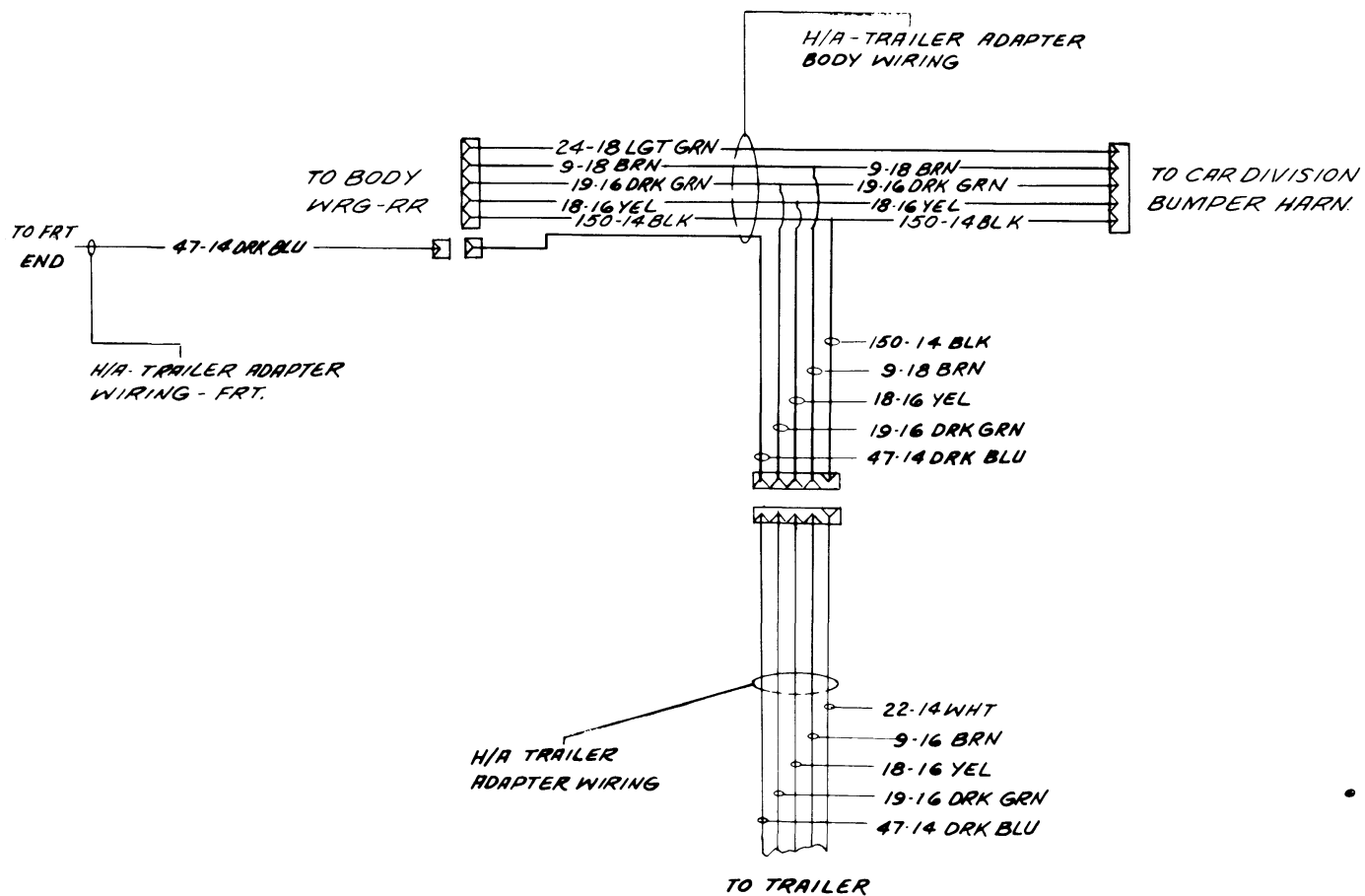
6661

Fig. 10-88-Rear Harness Circuit Diagram - Oldsmobile "E" Styles



6825

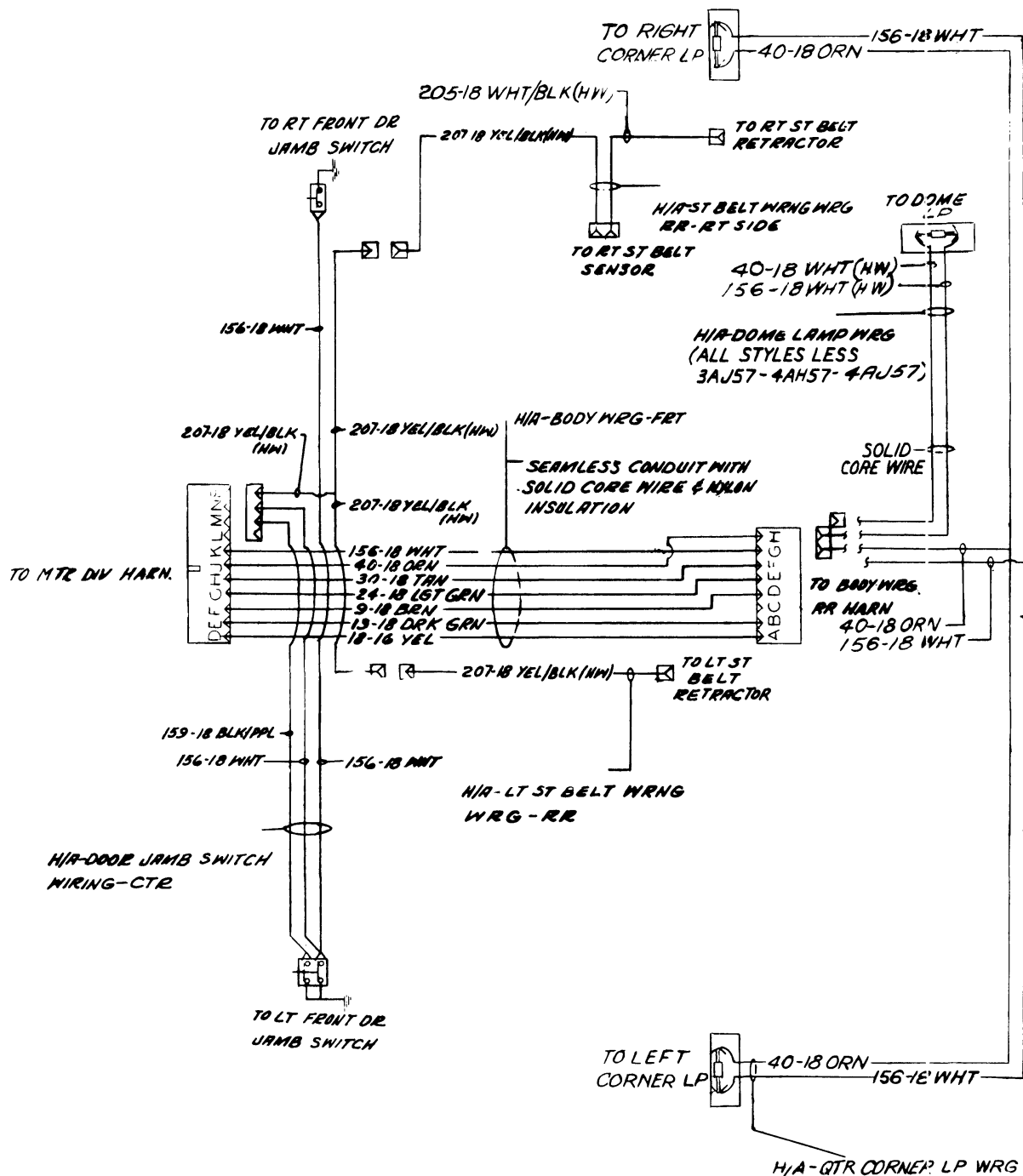
Fig. 10-89-Trailer Adapter Harness Circuit Diagram - Oldsmobile "A" Styles - Less Station Wagon



7221

Fig. 10-90-Trailer Adapter Harness Circuit Diagram - Oldsmobile "A" Station Wagon Styles





6834

Fig. 10-91-Front Harness Circuit Diagram - Buick "A-29-37-57" Styles

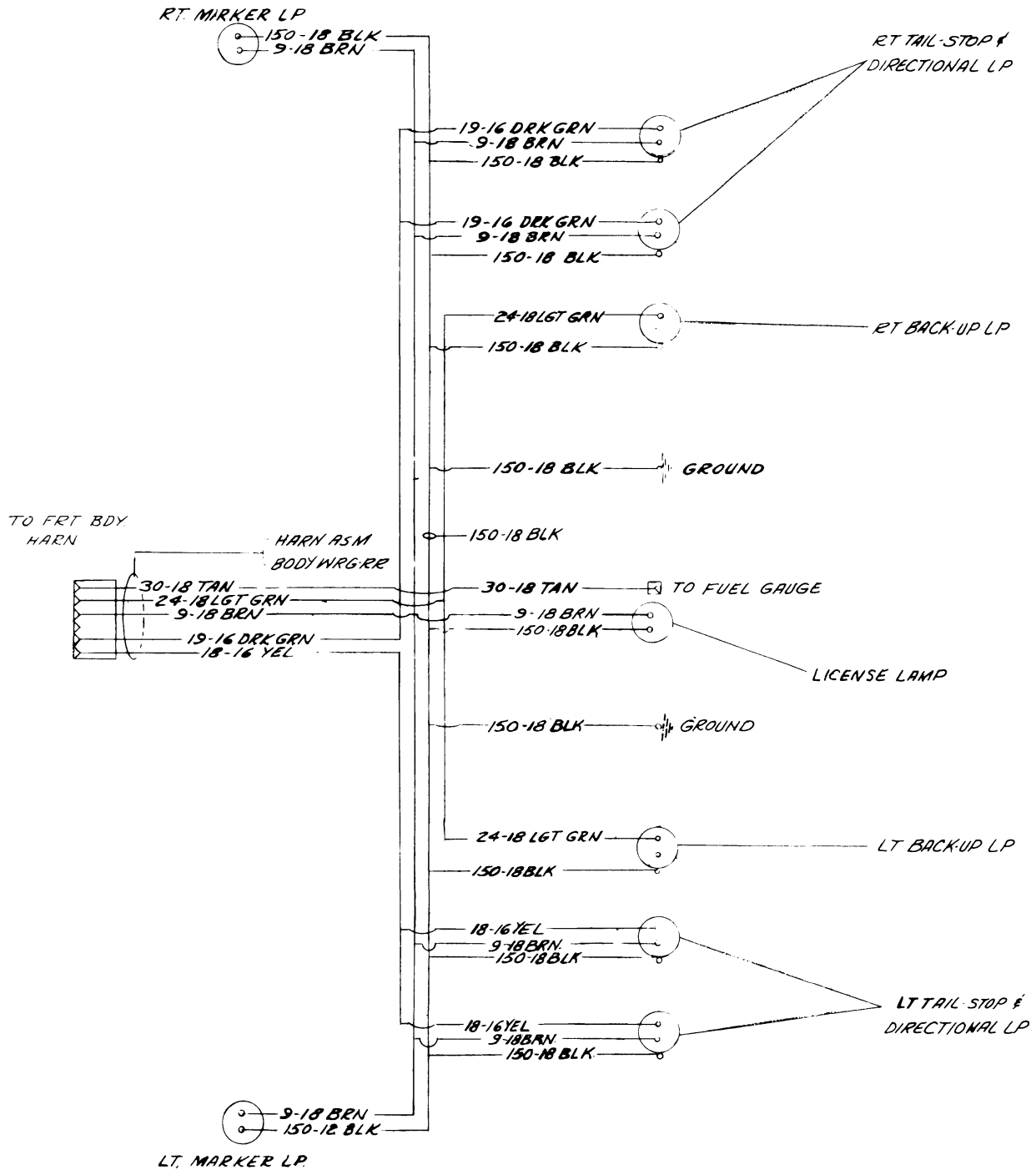


Fig. 10-92-Rear Harness Circuit Diagram - Buick "A-29-37-57" Styles

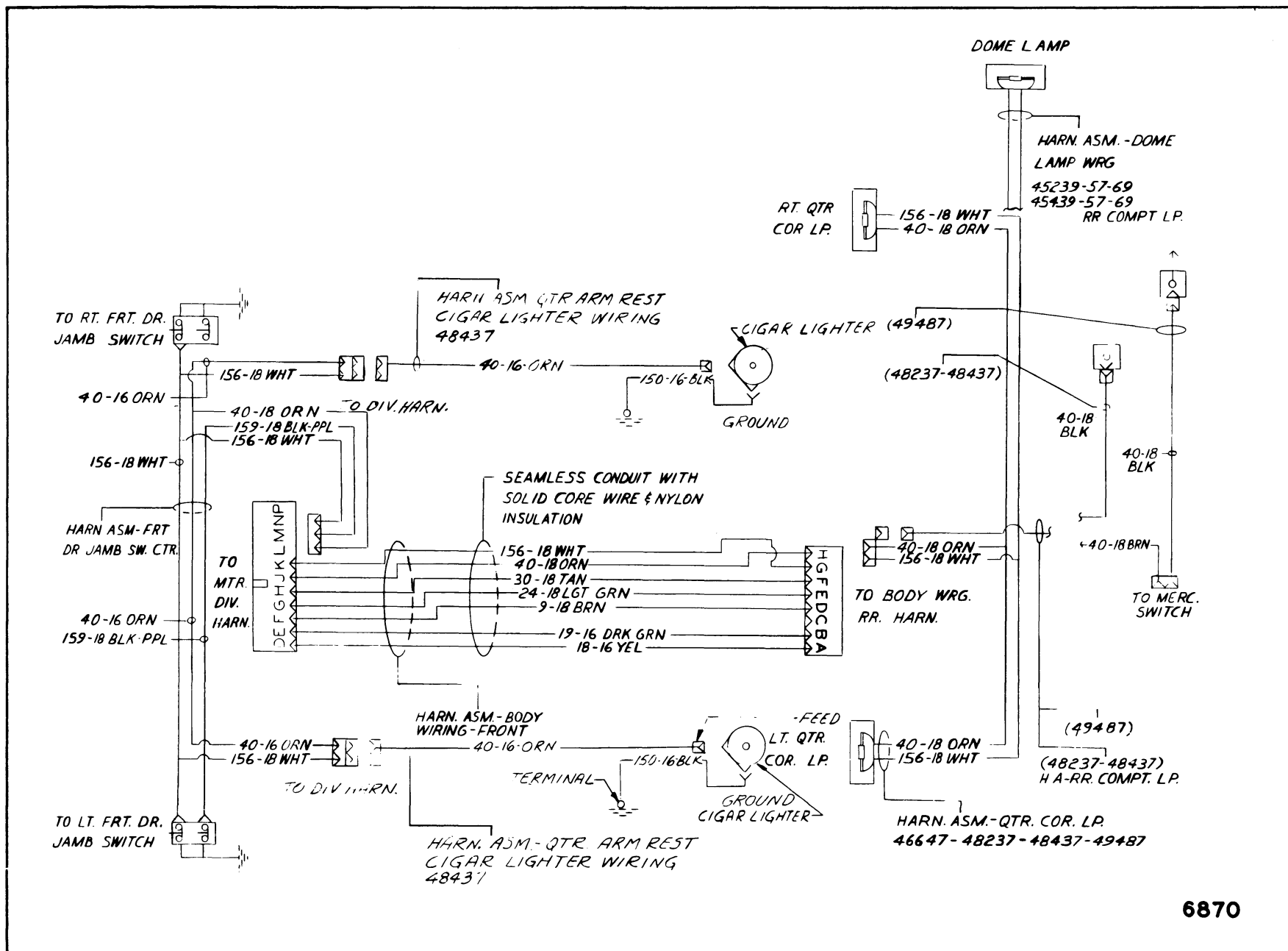


Fig. 10-93-Front Harness Circuit Diagram - Buick "B-C-E" Styles - Less Station Wagon, Convertible, 46639 and "C-39" Styles

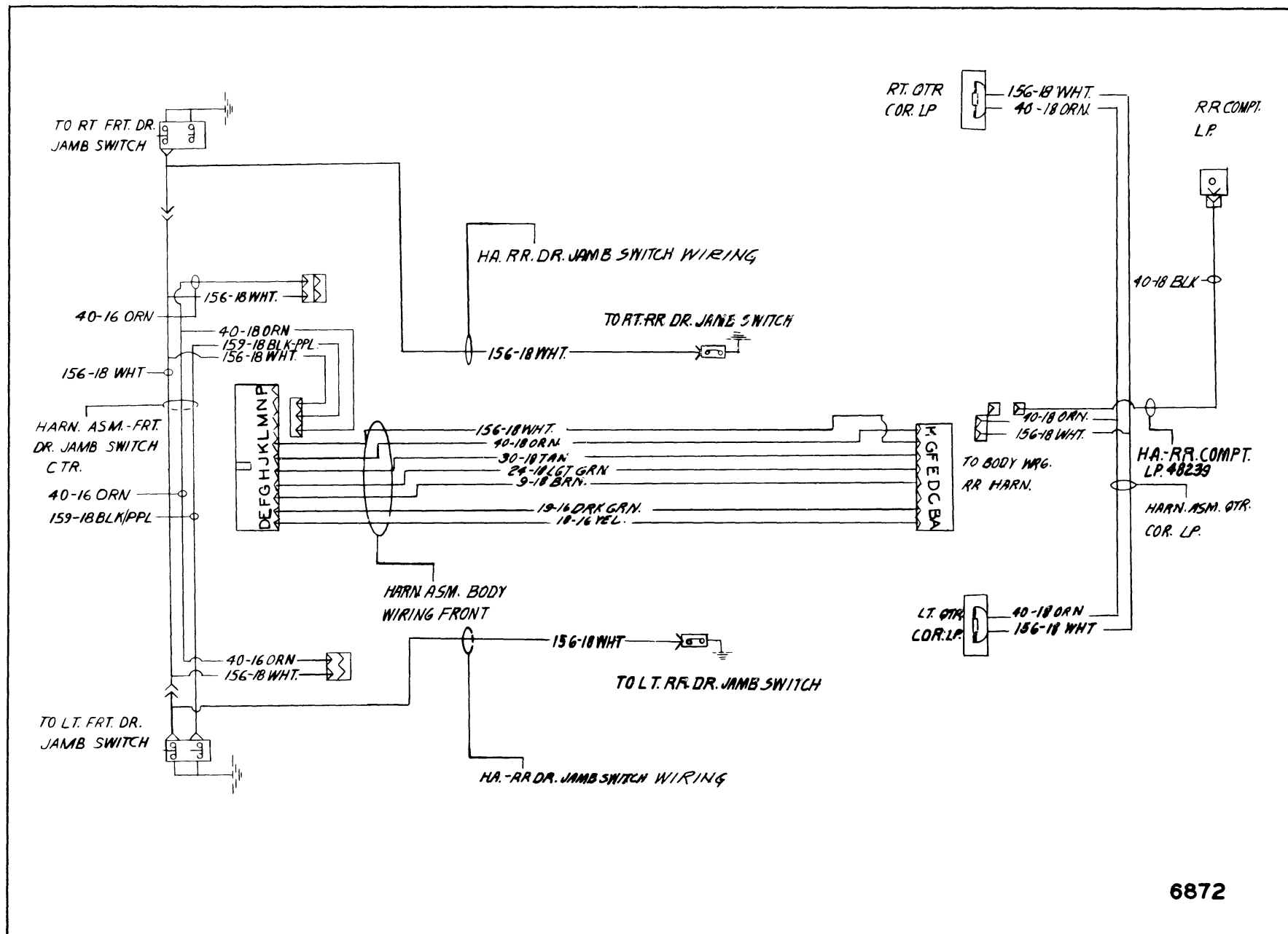
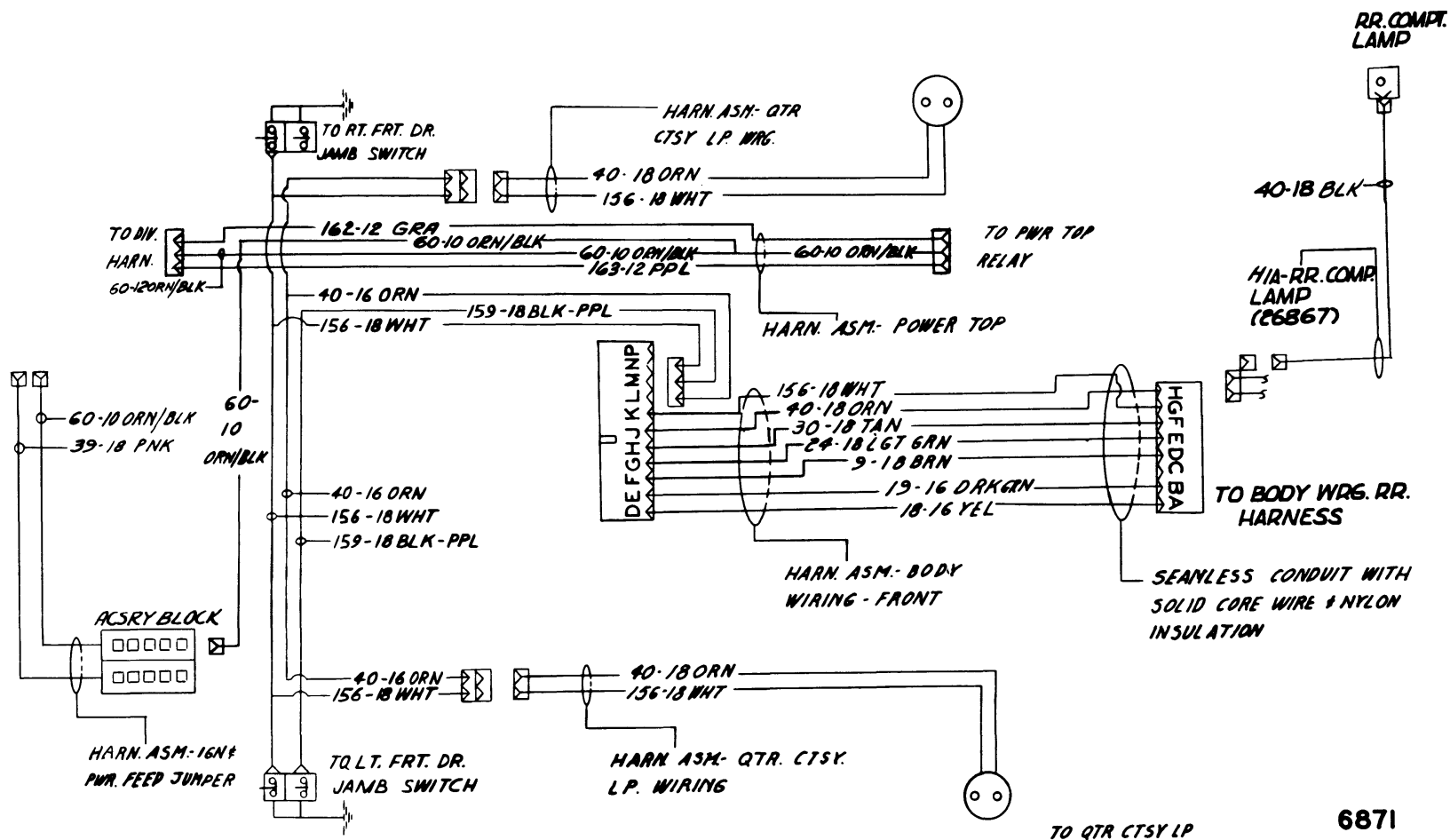


Fig. 10-94-Front Harness Circuit Diagram - Buick 46639 and 48239 Styles



**Fig. 10-95-Front Harness Circuit Diagram - Buick "B-67" Styles**

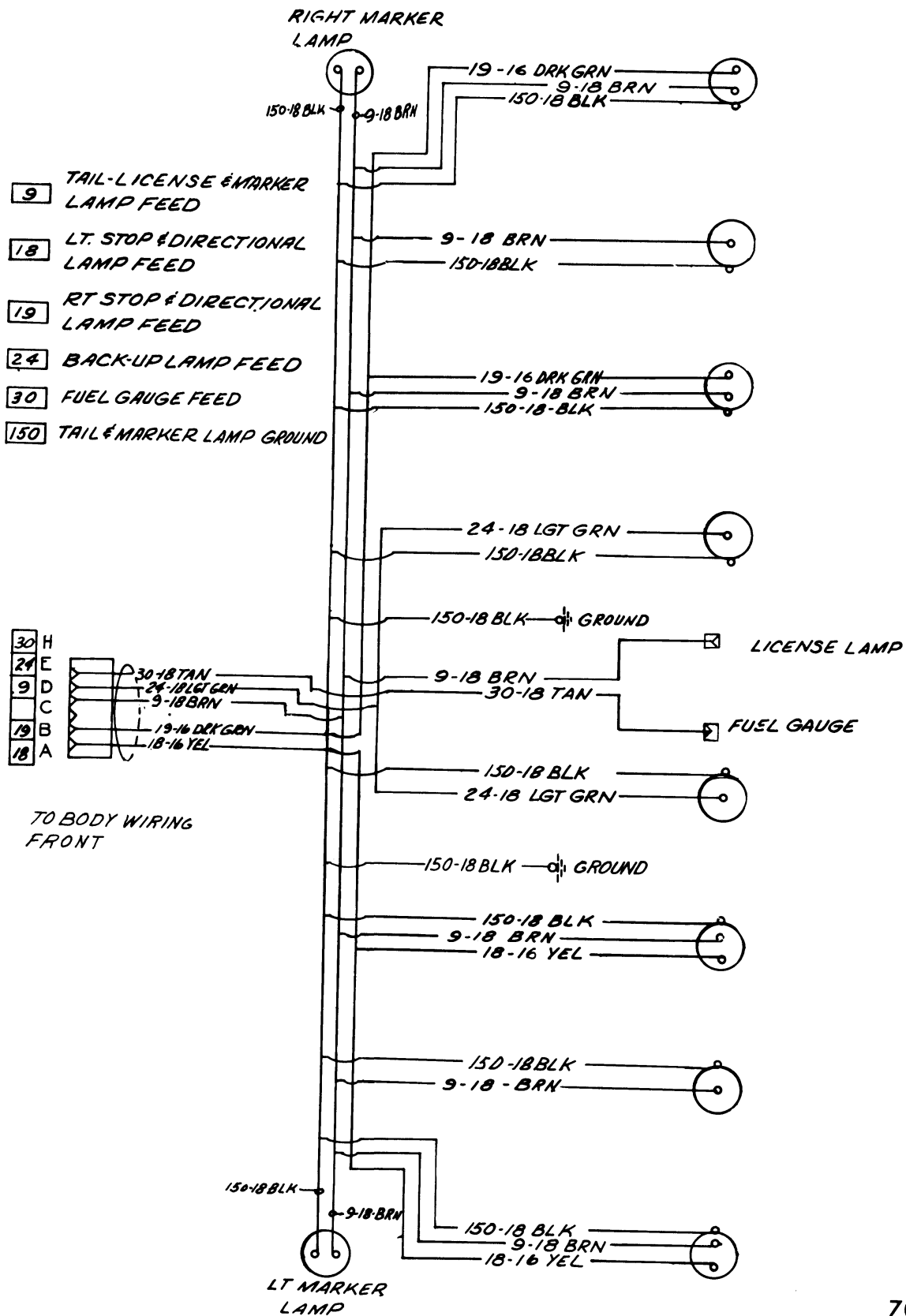


Fig. 10-96-Rear Harness Circuit Diagram - Buick "B" Styles - Less Station Wagon



**Fig. 10-97-Front Harness Circuit Diagram - Buick 48439 Style**

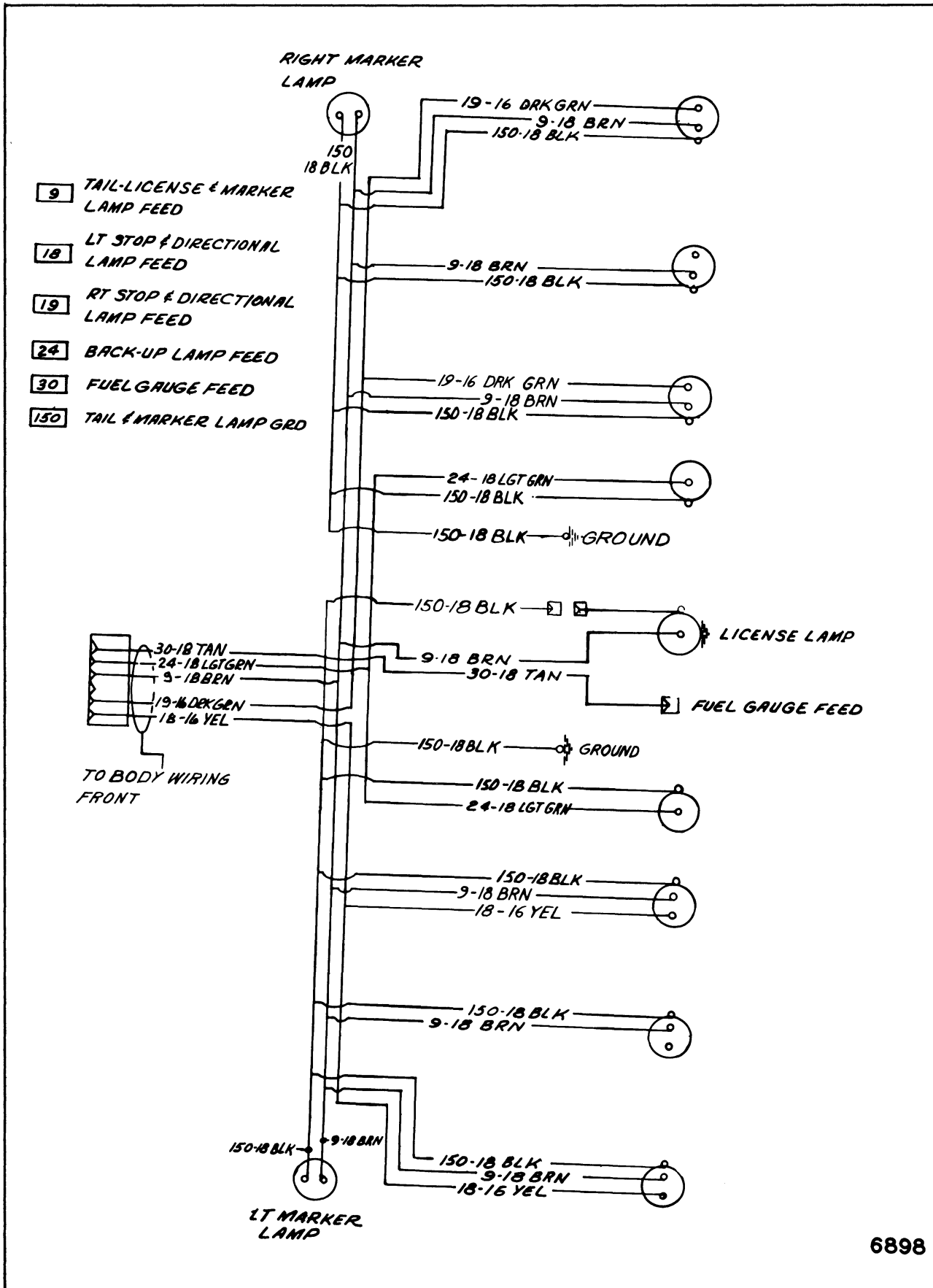
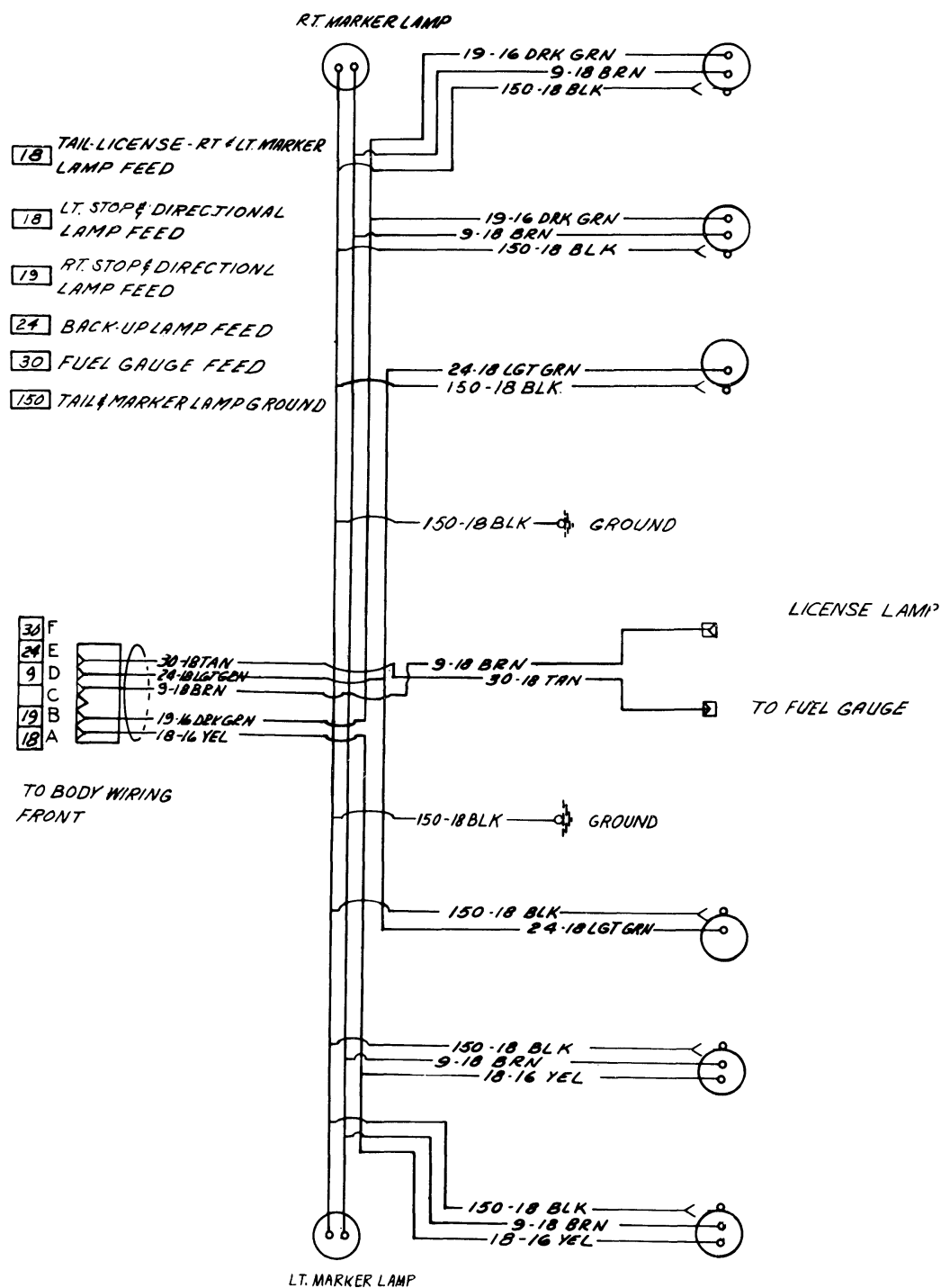


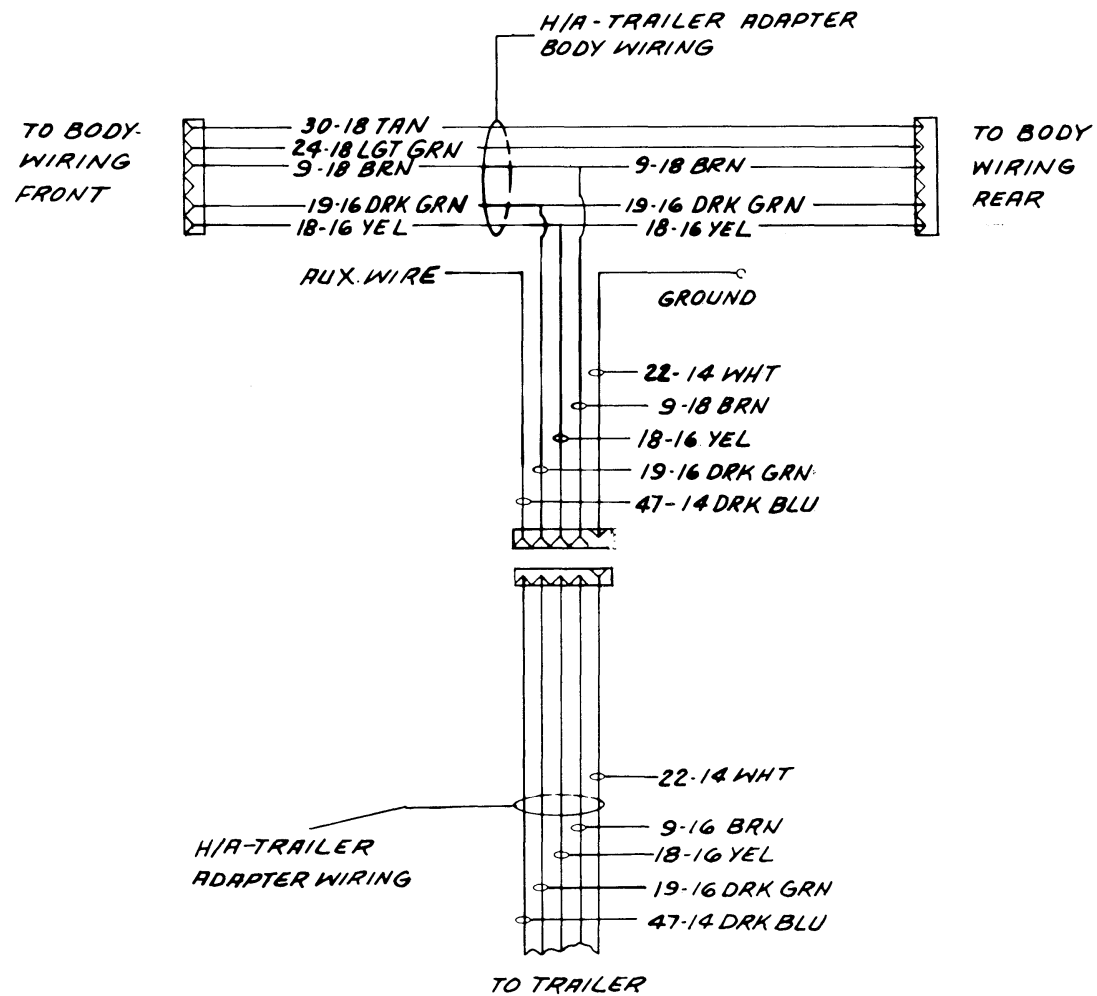
Fig. 10-98-Rear Harness Circuit Diagram - Buick "C" Styles





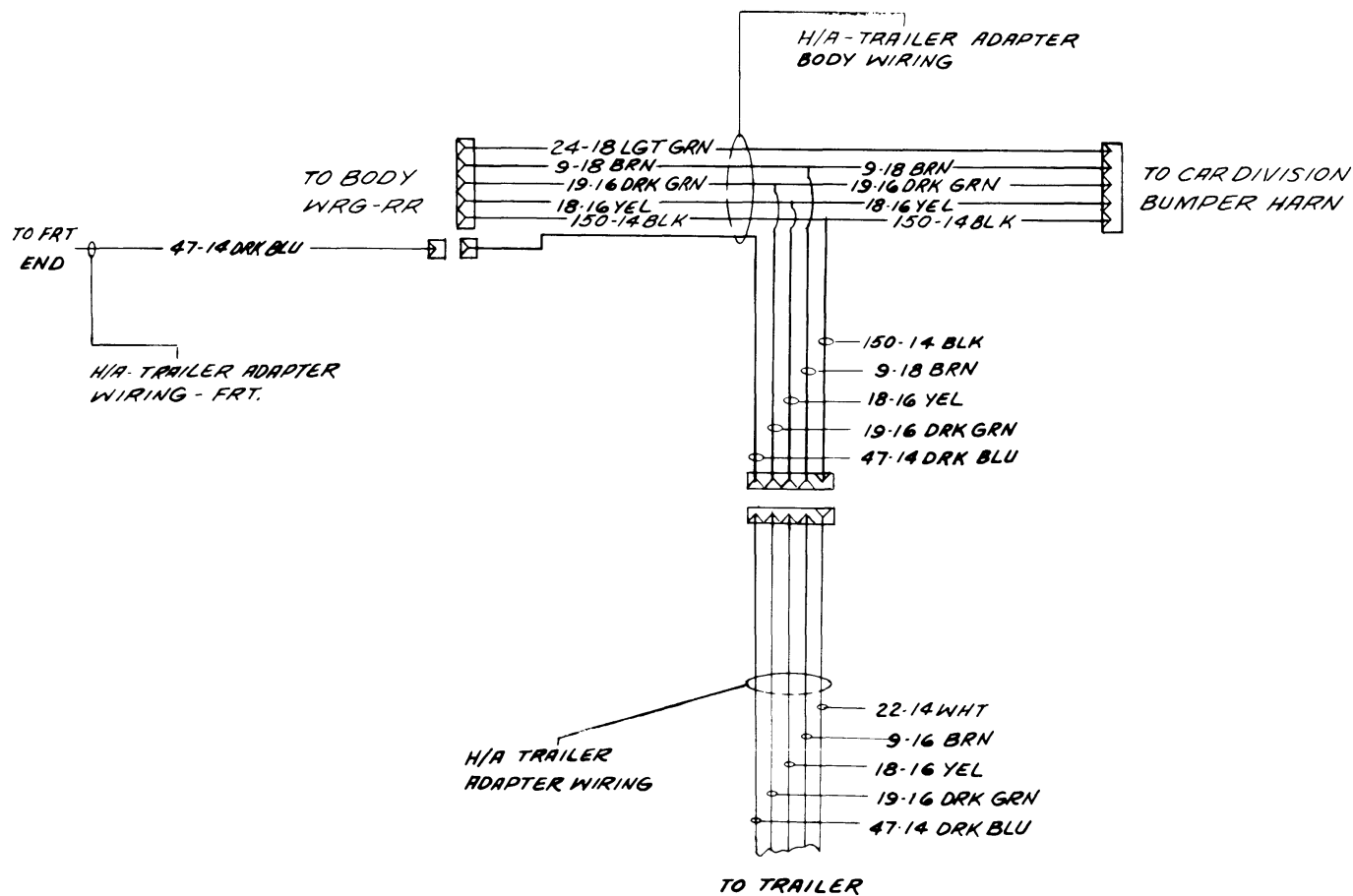
6660

Fig. 10-99-Rear Harness Circuit Diagram - Buick "E" Style



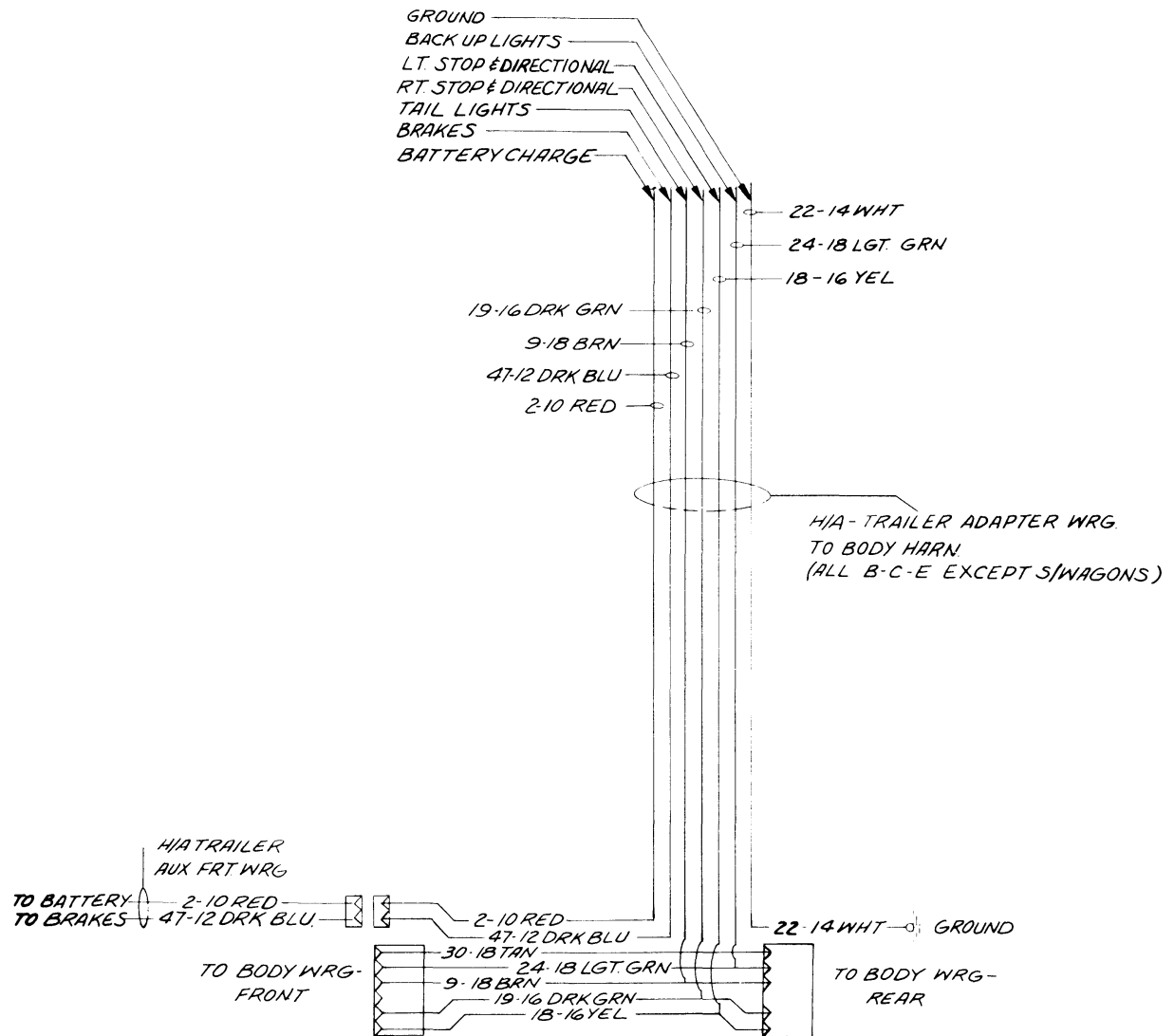
6825

Fig. 10-100-Trailer Adapter Circuit Diagram - Buick "A" Styles - Less Station Wagon



7221

Fig. 10-101-Trailer Adapter Circuit Diagram - Buick "A" Station Wagon Styles



7223

Fig. 10-102-Trailer Adapter Circuit Diagram - Buick "B, C and E" Styles

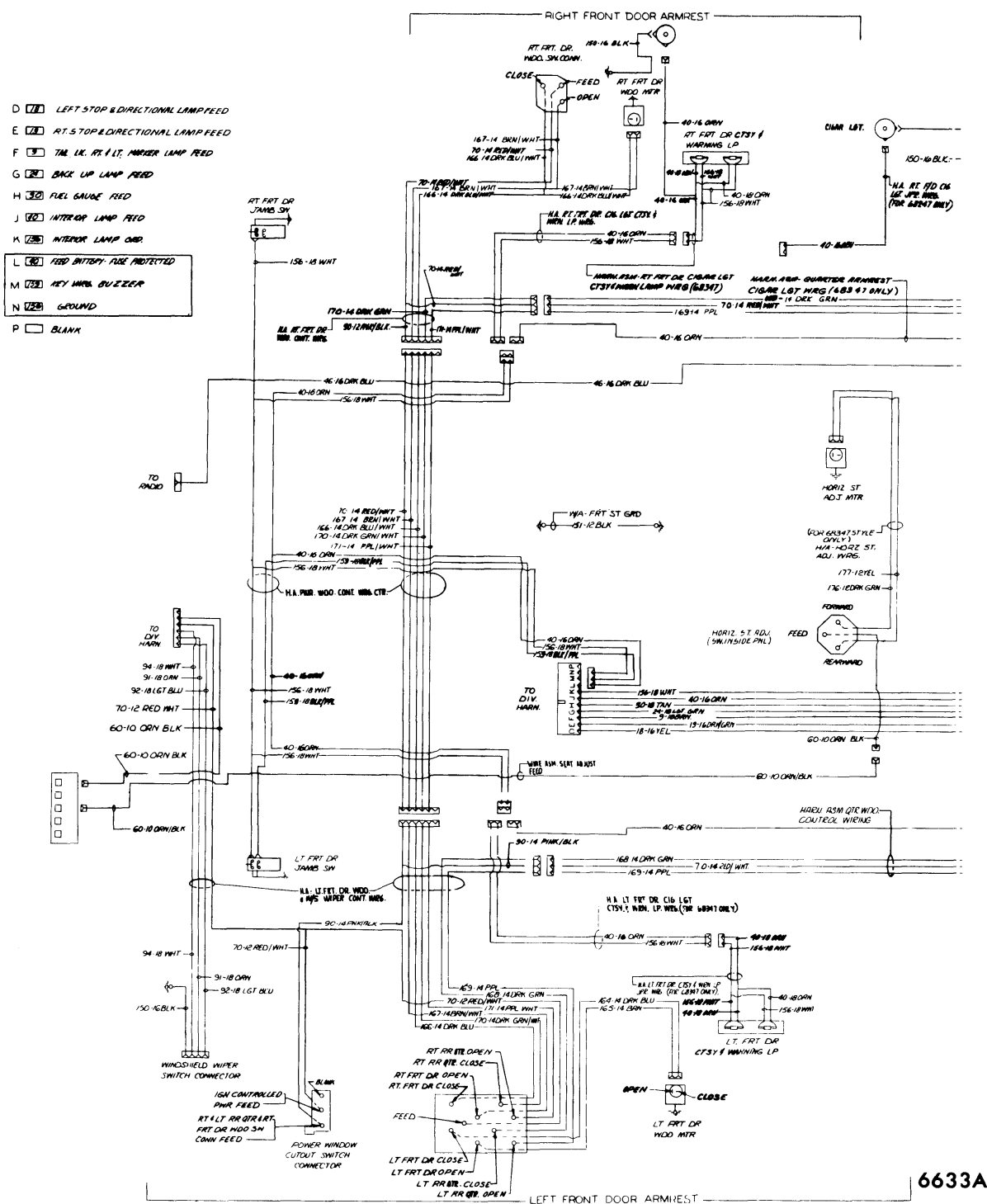
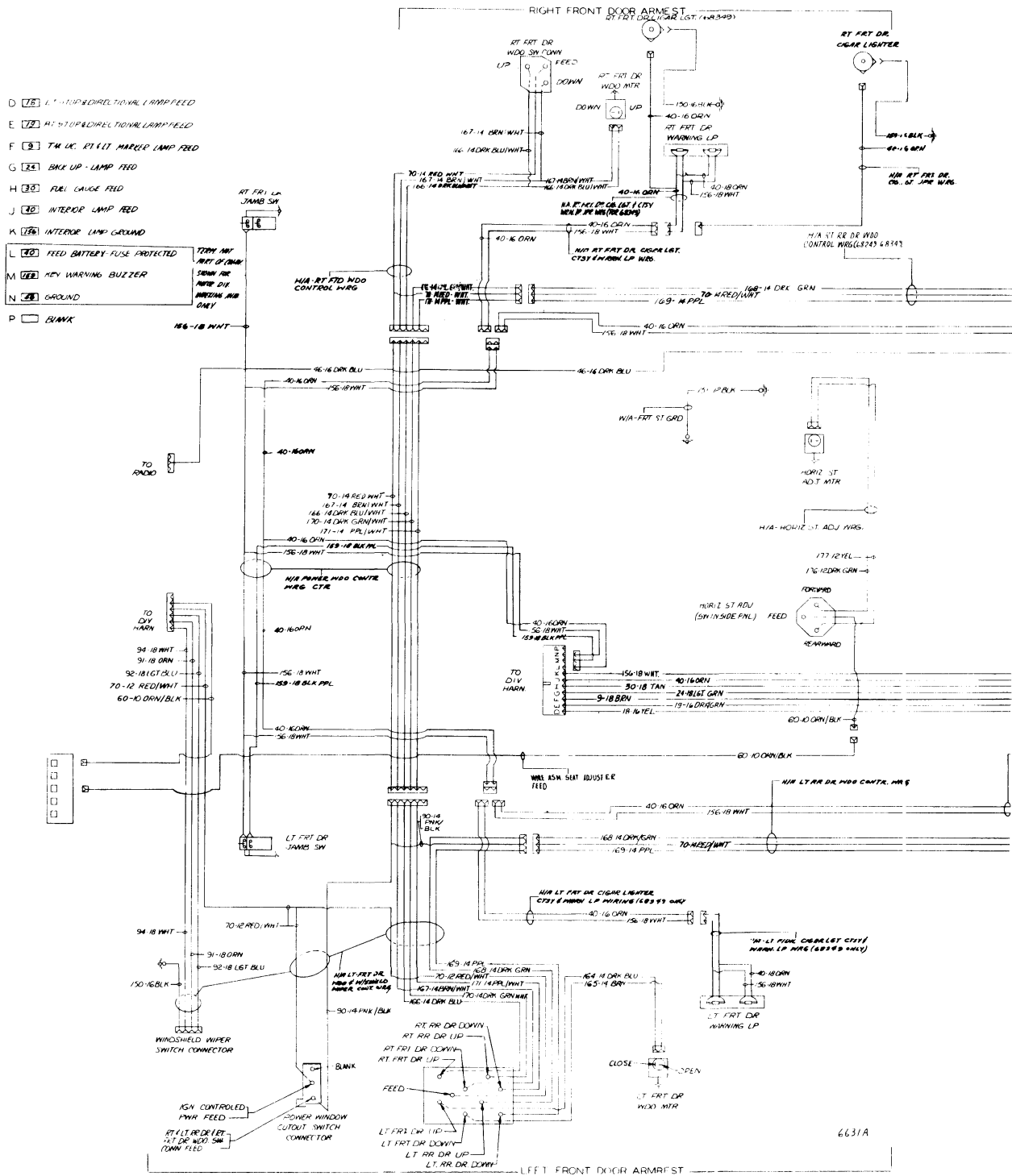


Fig. 10-103-Front Harness Circuit Diagram - Cadillac 68247-347 Styles

**Fig. 10-104-Rear Harness Circuit Diagram - Cadillac 68247-347 Styles**



**Fig. 10-105-Front Harness Circuit Diagram - Cadillac 68249-349 Styles**

**Fig. 10-106-Rear Harness Circuit Diagram - Cadillac 68249-349 Styles**



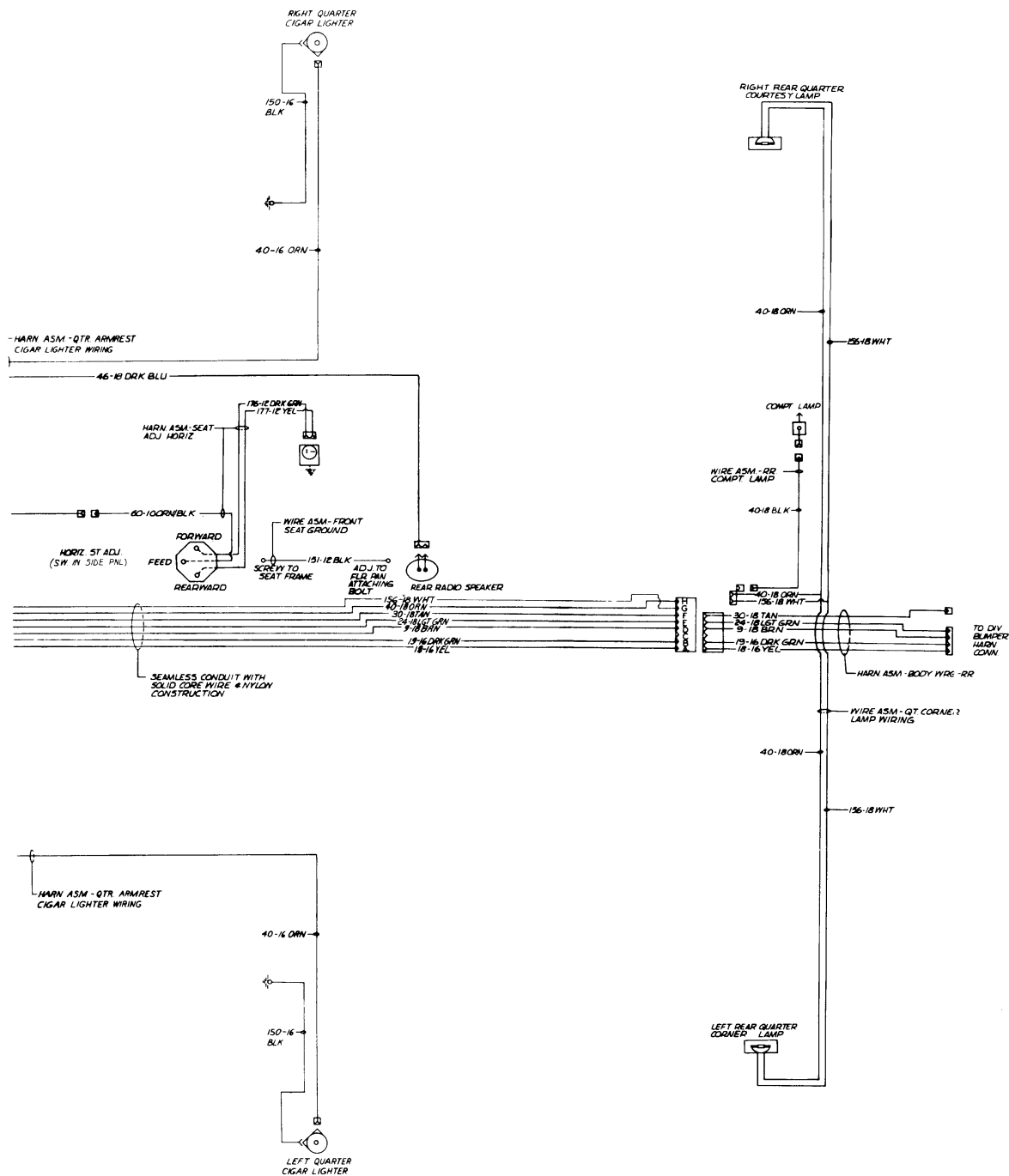


Fig. 10-107-Front Harness Circuit Diagram - Cadillac 68169 Style



**Fig. 10-109-Front Harness Circuit Diagram - Cadillac 69347 Style**

Fig. 10-111-Front Harness Circuit Diagram - Cadillac 69367 Style



6634

Fig. 10-110-Rear Harness Circuit Diagram - Cadillac 69347 Style

**Fig. 10-112-Rear Harness Circuit Diagram - Cadillac 69367 Style**

Fig. 10-113-Front Harness Circuit Diagram - Cadillac 69733 Style





SECTION 11

**EXTERIOR MOLDINGS**

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**DESCRIPTION**

The exterior moldings are secured to the body by any one or a combination of the following attachments. Refer to Fig. 11-1, 11-2 and 11-3 for illustrations of attachments.

- A. Attaching screw.
- B. Bolt and clip assembly with attaching nut.
- C. Integral stud with attaching nut.
- D. Windshield side reveal molding clip.
- E. Reveal molding snap-on clip.
- F. "W-base" type snap-in clip.
- G. Weld stud or screw retained plastic clip.
- H. Snap-in stud with pre-installed retainer.
- J. Snap-in type stud and clip (bayonet type) - (clip is an integral part of stud).
- K. Attaching screw (drip molding retainer).
- L. Attaching screw (used as clip).

- M. T-Nut.
- N. Joint clip.
- P. Slide-in T-Nut.
- Q. Tail gate belt finishing molding clip.
- R. Pinchweld molding clip.
- S. Spring type (self retained).
- T. Spring type (self retained).
- U. Hanger type clip.
- V. Roof panel cover molding retaining strip (weld stud or screw attached).

To use molding chart, and attachment illustrations use the following procedure:

1. Locate illustration of the body. Illustrations are separated by car line and body type.
2. Note the number and letter(s) of the molding to be removed.
3. Turn to the molding chart and locate the num-

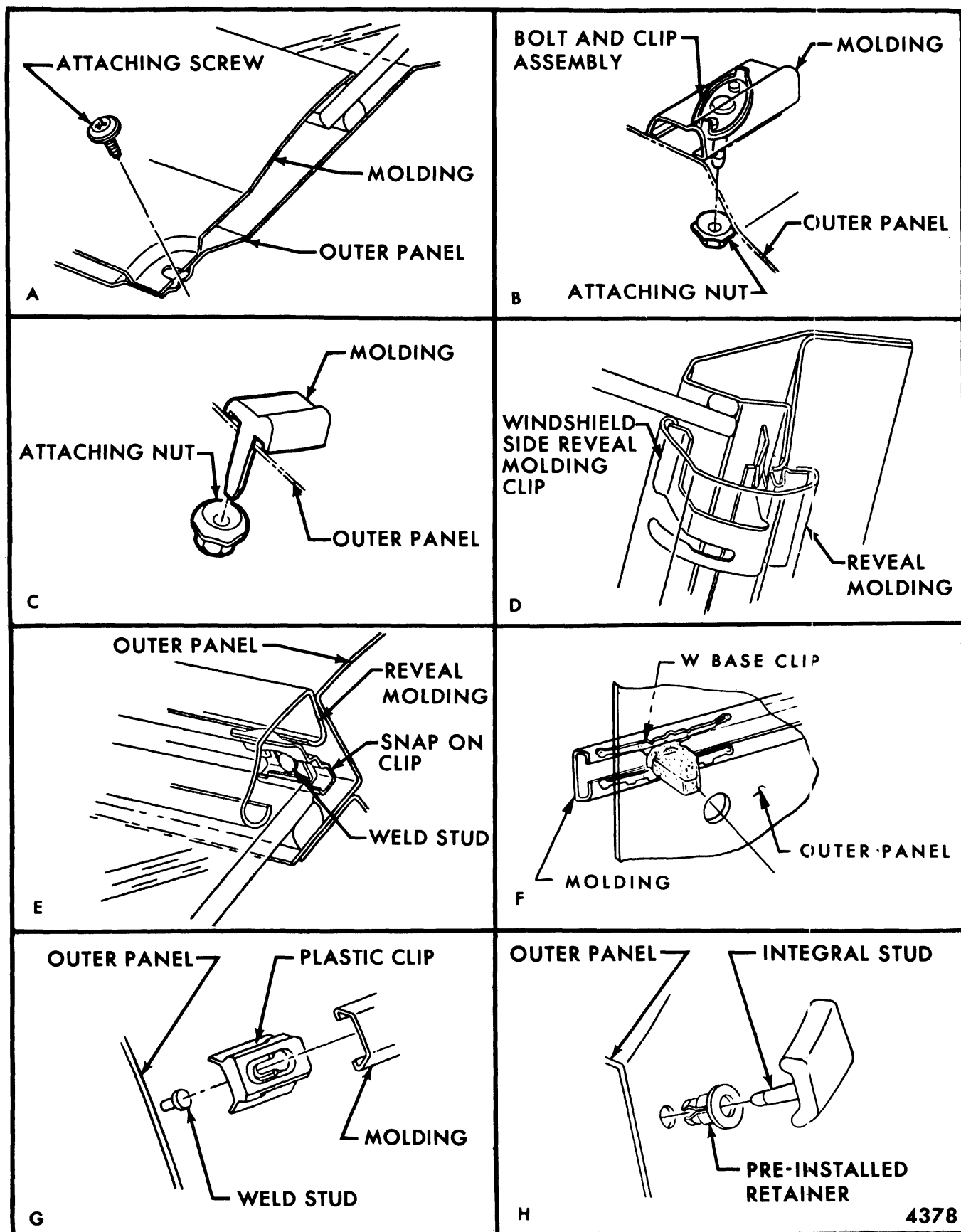


Fig. 11-1-Exterior Molding Attachments

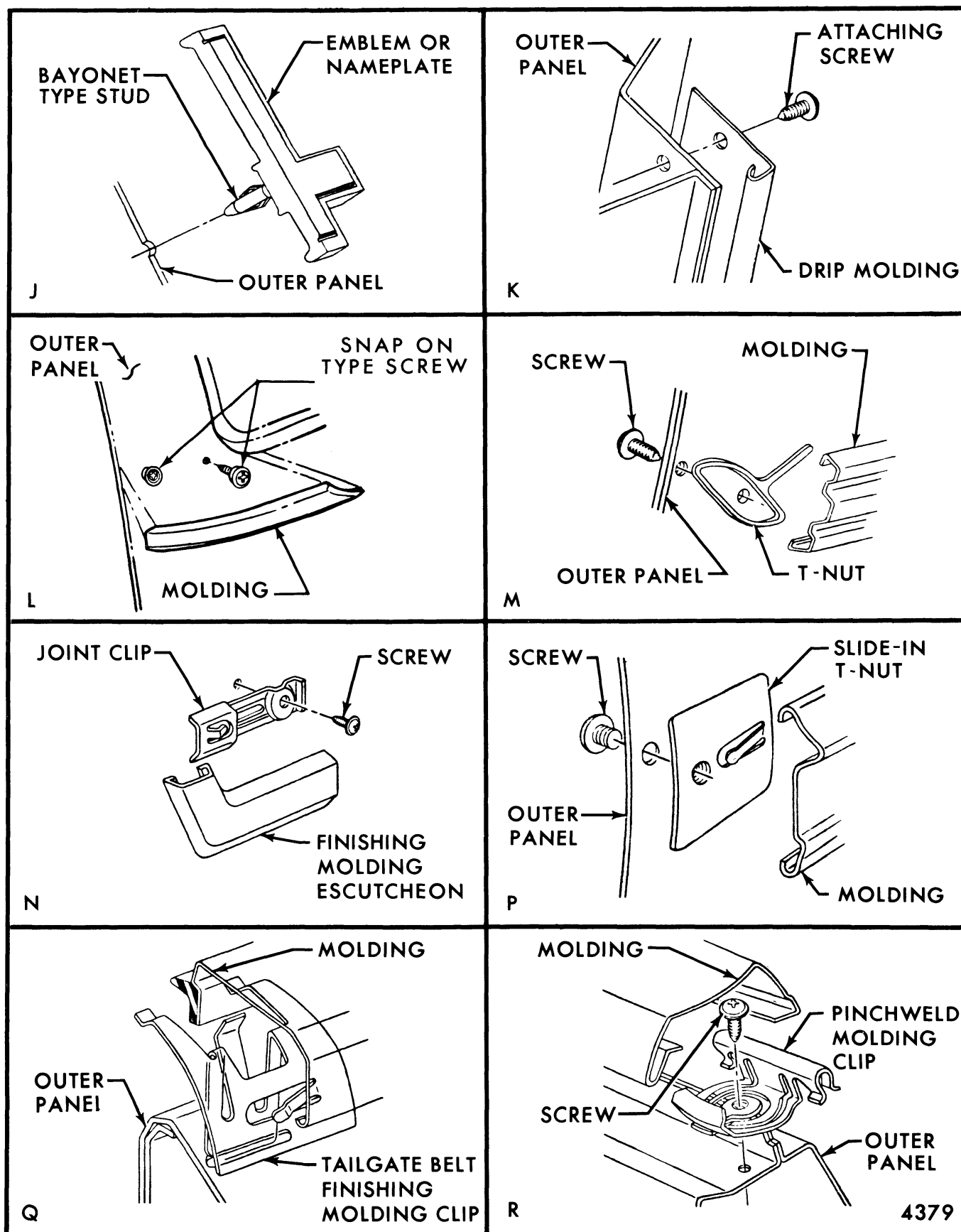


Fig. 11-2-Exterior Molding Attachments

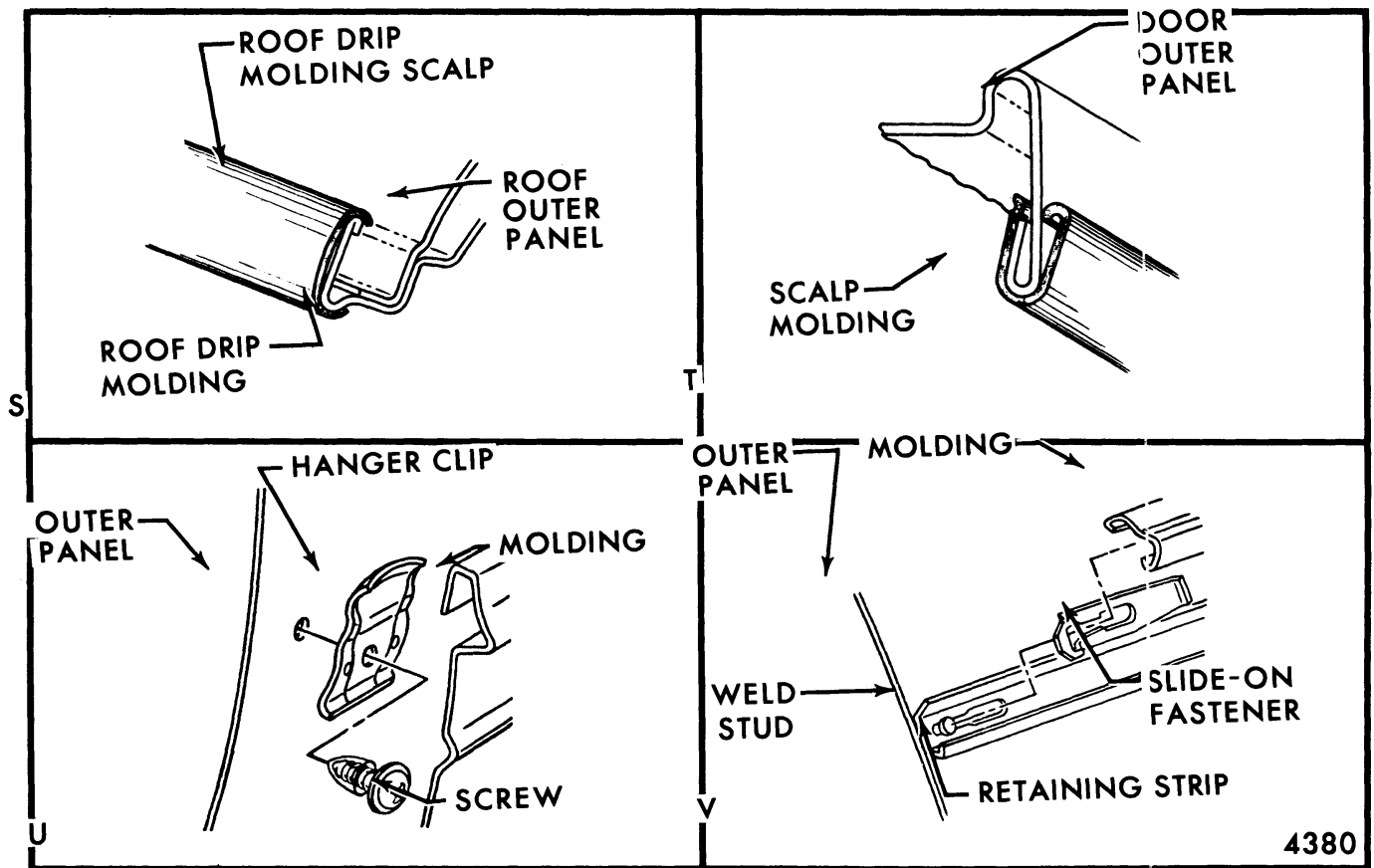


Fig. 11-3-Exterior Molding Attachments

ber noted in step two for proper molding nomenclature.

4. Turn to the attachment illustrations (Fig. 11-1, 11-2 and 11-3) and locate the letter(s) for appropriate method of retention.

**NOTE:** Convertible styles are not illustrated but are indicated on similar styles.

## GENERAL PRECAUTIONS

When removing or installing any body exterior molding certain precautions should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. When a molding is overlapped the overlapping molding must be partially disengaged or removed first.

## SEALING OPERATION

Although detailed sealing operations for each individual molding are not described, the following information is given to permit a satisfactory sealing operation.

Medium-bodied sealer or body caulking compound are the sealers most frequently used to provide either a watertight seal or for anti-rattle measures.

Holes in body panels for screws, bolts, or clips that would permit water to enter the interior of the body must be sealed with body caulking compound or presealed screws, nuts or clips.

Drip moldings require a 1/4" bead of medium-bodied sealer along the full length of the inner attaching surface. Door window scalps and center pillar scalps require a 1/8" x 1/4" x 1/4" bead of caulking compound at 5" intervals for anti-rattle purposes. Pinchwelds require medium-bodied sealer on both sides when pinchweld clips are used.

SERIES	TOOL NUMBER	DESCRIPTION
--	J-21549-1	Handle
A	J-21549-3 J-21549-4	Reveal Molding Remover (Lt.) Reveal Molding Remover (Rt.)
B-C-D E-F	J-21549-10 J-21549-11	Reveal Molding Remover (Lt.) Reveal Molding Remover (Rt.)
X	J-21549-5 J-21549-6	Reveal Molding Remover (Lt.) Reveal Molding Remover (Rt.)

5190

Fig. 11-4-Reveal Molding Removal Tool Usage Chart

## TOOLS AND CARE

The following groups of moldings are listed with the name or description of the tool which is suitable for molding removal.

1. Roof Drip Scalps - pointed hook tool.
2. Door Window Scalps - thin flat-bladed tool (putty knife).

## REVEAL MOLDINGS

Reveal moldings around adhesive caulked glass installations are retained by clips, which are attached to the body opening by weld-on studs or screws. A projection on the clip engages the reveal molding flange, retaining the molding between the clip and body metal (View "E", Fig. 11-1). To disengage a molding from retaining clips, use appropriate tool (see chart on Fig. 11-4) as shown in Figure 11-5 (equivalent tools may be used). Windshield side reveal moldings on "B, C, D, E and F" hardtop styles are retained by barbed clips (View "D", Fig. 11-1).

**IMPORTANT:** A thin flat-bladed tool (putty knife) must be inserted from opposite windshield side of molding to disengage barbed clips while lifting molding.

## MOLDING CLIP REPLACEMENT

If a weld stud on an outer panel becomes damaged or broken off, use the following procedure:

1. Drill a small hole in the panel adjacent to original weld stud installation.

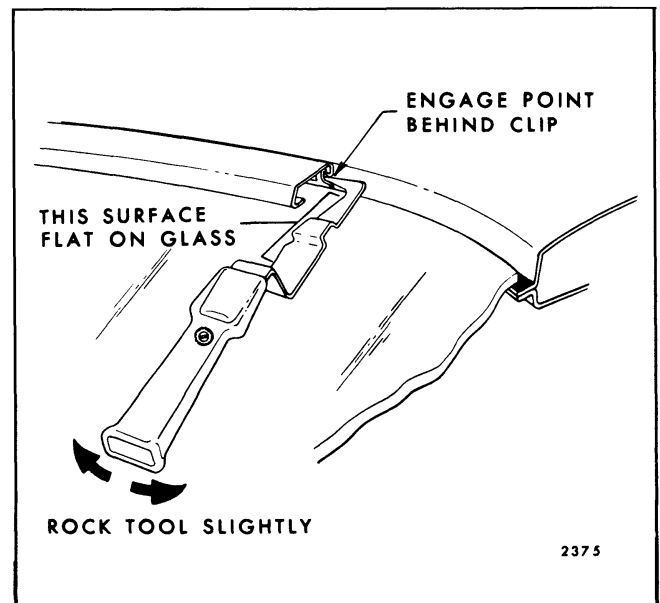


Fig. 11-5-Reveal Molding Removal Tool Usage Procedure (Illustrated Tool Is For "X" Styles Only, Refer to Fig. 11-4 For Other Tool Usage)

2. Insert a self sealing screw through original clip and into outer panel, or replace damaged weld stud with self sealing screw type weld stud.

If a weld stud, attaching screw, or molding clip becomes damaged or broken off and must be replaced in a windshield, back window or quarter window use the following procedure:

1. Drill a small hole in the corner of the window opening rabbet adjacent to original weld stud or screw installation.
2. Insert a self-sealing screw through alternate replacement clip and into panel (Fig. 11-6).

**CAUTION:** Avoid contact with edge of glass during drilling operation and when installing clip.

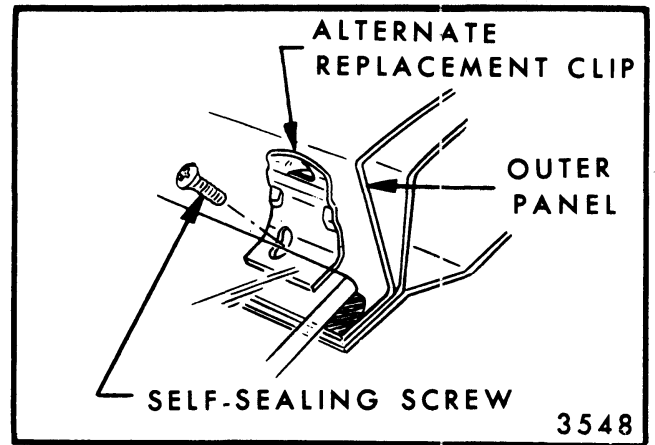


Fig. 11-6-Reveal Molding Clip Alternate Replacement

## EXTERIOR MOLDING CHART

KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM
1	Windshield Reveal Lower		17	Roof Panel Emblem and/or Nameplate		34	Roof Drip Upper	
2	Windshield Reveal Side		18	Roof Drip Front Scalp		36	Back Window Upper Reveal	
3	Windshield Reveal Upper		19	Roof Drip Upper Front Scalp		37	Back Window Side Reveal	
4	Windshield Pillar Finishing		20	Roof Drip Front Scalp Escutcheon		38	Back Window Lower Reveal	
5	Windshield Pillar Drip Scalp		21	Roof Drip Upper Front Corner Escutcheon		39	Back Window Reveal Upper Corner Escutcheon	
6	Windshield Upper Corner Escutcheon		22	Roof Drip Scalp		40	Back Window Reveal Lower Corner Escutcheon	
7	Windshield Header		23	Roof Drip Upper Side Scalp		41	Back Window Reveal Upper and Side	
8	Windshield Reveal Upper and Side		24	Roof Drip Rear Scalp		42	Back Window Reveal Lower and Side	
9	Windshield Pillar Drip		25	Roof Drip Upper Rear Scalp		43	Back Window Reveal	
11	Roof Panel Cover Front		26	Rear Center Finishing at Back Window		46	Rear End Belt Reveal	
12	Roof Panel Cover Front Corner Escutcheon		27	Roof Corner Finishing at Back Window		47	Rear End Outer Panel (Upper)	Bumper if Req'd
13	Roof Panel Cover Side		28	Roof Panel Cover Rear		48	Rear End Outer Panel (Lower)	Bumper or Tail Lamp if Req'd
14	Roof Panel Cover Side-Rear Lower Corner Escutcheon		29	Roof Panel Cover Finishing at Lid Opening		49	Rear End Outer Panel Side (Upper)	Bumper if Req'd
15	Roof Panel Cover Side-Rear Upper Corner Escutcheon		30	Roof Drip Front		50	Rear End Outer Panel Side (Lower)	Bumper if Req'd
16	Roof Panel Cover Side-Rear Vertical		31	Roof Drip Rear				
			32	Roof Drip at Quarter Window				
			33	Roof Drip Vertical				

## EXTERIOR MOLDING CHART

KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM
51	Rear End Outer Panel Emblem and/or Name- plate		73	Rear Compartment Lid Outer Panel Side		87	Front Door Outer Panel Transfer Finishing Upper Rear	
56	Tailgate Outer Panel Upper		76	Front Door Window Frame Front Scalp		88	Front Door Outer Panel Transfer Finishing Upper Front	
57	Tailgate Outer Panel Lower		77	Front Door Window Frame Upper Scalp		89	Front Door Outer Panel Upper Front	
58	Tailgate Outer Panel Transfer Finishing Side		78	Front Door Window Frame Rear Scalp		90	Front Door Outer Panel Upper Rear	
59	Tailgate Outer Panel Transfer Finishing Upper		79	Front Door Window Belt Reveal	Front Door Window Lower Stop, if Req'd	96	Rear Door Window Frame Front Scalp	
60	Tailgate Outer Panel Transfer Finishing Lower		80	Front Door Outer Panel Upper		97	Rear Door Window Frame Upper Scalp	
61	Tailgate Outer Panel Emblem and/or Name- plate		81	Front Door Outer Panel Lower		98	Rear Door Window Frame Rear Scalp	
62	Tailgate Belt Finishing		82	Front Door Outer Panel Transfer Finishing Upper		99	Rear Door Window Belt Reveal	Rear Door Window Lower Stop, if Req'd
63	Tailgate Belt Reveal		83	Front Door Outer Panel Transfer Finishing Lower		100	Rear Door Outer Panel Upper	
66	Back Body Opening Upper Reveal		84	Front Door Belt Reveal Front		101	Rear Door Outer Panel Lower	
67	Opening Side Reveal		85	Front Door Outer Panel Peak		102	Rear Door Outer Panel Transfer Finishing Upper	
68	Back Body Pillar Belt Reveal		86	Front Door Edge Guard				
71	Rear Compartment Lid Outer Panel Emblem and/or Nameplate							
72	Rear Compartment Lid Outer Panel							



## EXTERIOR MOLDING CHART

KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM
103	Rear Door Outer Panel Transfer Finishing Lower		127	Rear Quarter Window Frame Upper Scalp		139	Belt Finishing Rear of Rear - Lower	
104	Rear Door Outer Panel Peak		128	Rear Quarter Window Reveal Front Upper Corner Escutcheon		140	Rear Quarter Pinchweld Belt Finishing Front	
105	Rear Door Edge Guard		129	Rear Quarter Window Reveal Upper		141	Rear Quarter Pinchweld Belt Finishing Rear	
106	Rear Door Belt Reveal Rear		130	Rear Quarter Window Reveal Front		142	Rear Quarter Pinchweld Belt Finishing Rear of Rear-Upper	
107	Rear Door Outer Panel Transfer Finishing Upper Front		131	Rear Quarter Window Reveal Lower		143	Rear Quarter Pinchweld Finishing	
108	Rear Door Outer Panel Transfer Finishing Upper Rear		132	Quarter Window Reveal Upper Rear Escutcheon		144	Rear of Rear Quarter Outer Panel Transfer Finishing Upper	
116	Center Pillar Scalp		133	Rear Quarter Window Belt Reveal	Rear Quarter Window Lower Stop, if Req'd	145	Rear of Rear Quarter Outer Panel Transfer Finishing Lower	
117	Center Pillar Drip Upper Front Corner		134	Rear Quarter Belt Reveal Front Corner Escutcheon		146	Rear of Rear Quarter Outer Panel Transfer Finishing	
118	Center Pillar Drip Upper Rear Corner		135	Rear Quarter Belt Reveal	Rear Quarter Upper Trim if Req'd	147	Rear of Rear Quarter Outer Transfer Finishing Vertical	
119	Center Pillar Drip Front		136	Rear Quarter Belt Reveal Rear Corner Escutcheon		148	Rear Quarter Outer Panel Transfer Finishing Upper	
120	Center Pillar Drip Rear		137	Rear Quarter Belt Reveal Front		149	Rear Quarter Outer Panel Transfer Finishing Upper Front (Lt. Side)	
121	Center Pillar Belt Reveal		138	Rear Quarter Belt Finishing at Back Window Rear Quarter	Seat Back			
122	Center Pillar Upper							
123	Center Pillar Lower							
126	Rear Quarter Window Frame Front Scalp							

## EXTERIOR MOLDING CHART

KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM	KEY	MOLDING NAME	REMOVE HARDWARE OR TRIM
150	Rear Quarter Outer Panel Transfer Finishing at Gas Tank Filler Door (Lt. Side)		160	Rear Quarter Outer Gas Tank Filler Door Edge Guard		175	Rear of Rear Wheel Opening Outer Panel Transfer Finishing	
151	Rear Quarter Outer Panel Transfer Finishing Upper Rear (Lt. Side)		161	Rear Quarter Outer Panel Crown Finishing		176	Rear Wheel Opening Cover	
152	Rear Quarter Outer Panel Transfer Finishing Rear Vertical		162	Rear of Rear Quarter Outer Panel	Bumper if Req'd	177	Rear of Rear Wheel Opening Lower	
153	Rear Quarter Outer Panel Transfer Finishing Rear Vertical Lower		163	Rear Quarter Outer Panel Emblem and/or Nameplate		178	Rear Wheel Opening Cover Front	
154	Rear Quarter Outer Panel Transfer Finishing Rear		164	Rear Quarter Pinchweld Front		179	Rear Wheel Opening Cover Rear	
155	Rear Quarter Outer Panel Transfer Finishing Front		165	Rear Quarter Pinchweld Rear		181	Body Lock Pillar Belt Reveal	
156	Rear Quarter Outer Panel Peak		166	Rear Quarter Window Reveal Rear				
157	Rear Quarter Outer Panel Upper		167	Rear Quarter Window Vent Div. Channel				
158	Rear Quarter Outer Panel Rear Lower		168	Rear Quarter Window Vertical				
159	Rear Quarter Belt Reveal Rear		169	Rear Quarter Window Reveal				
			171	Front of Rear Wheel Opening				
			172	Rear Wheel Opening				
			173	Rear of Rear Wheel Opening				
			174	Front of Rear Wheel Opening Outer Panel Transfer Finishing				

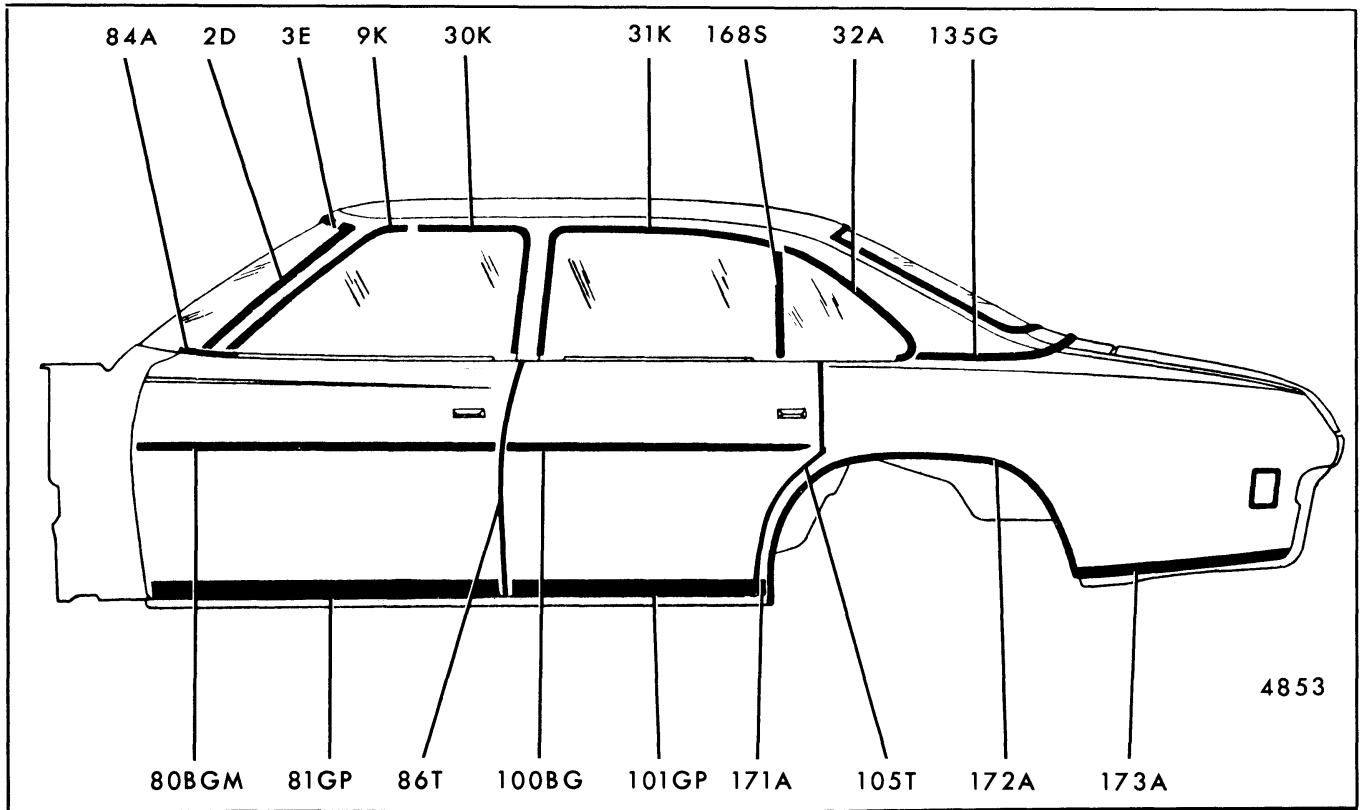


Fig. 11-7-Chevrolet 1AE29 Styles (1AD, 1AC29 Similar)

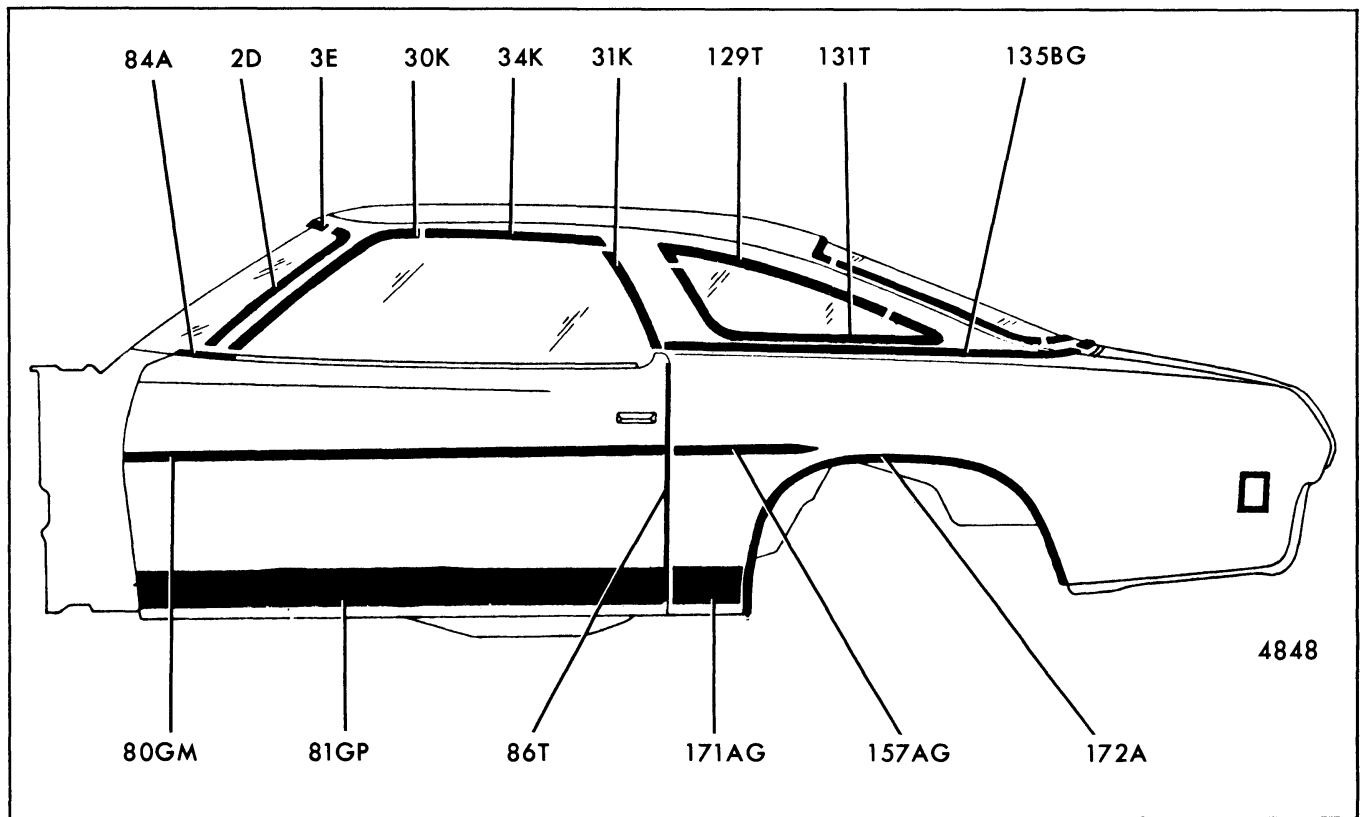


Fig. 11-8-Chevrolet 1AE37 Styles (1AD, 1AC37 Similar)

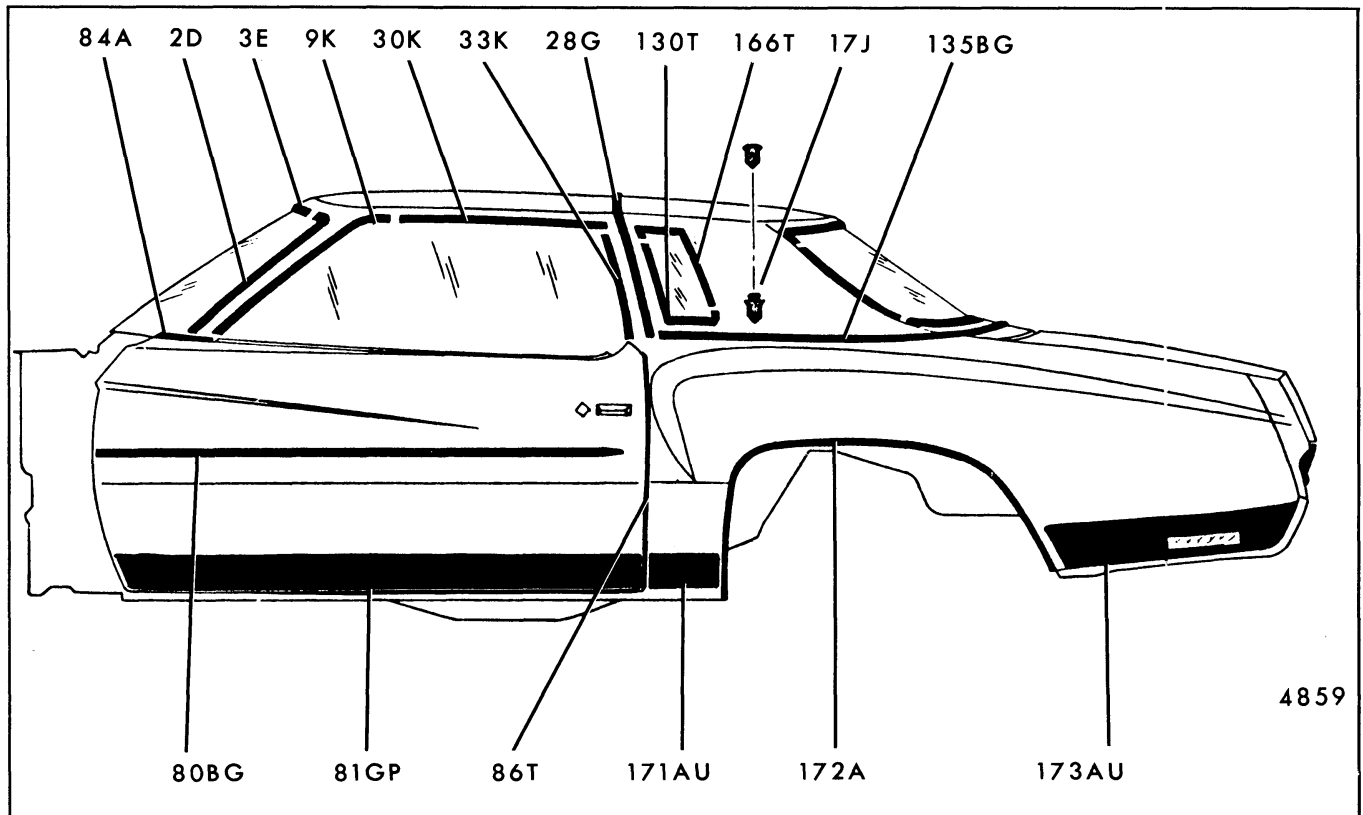


Fig. 11-9-Chevrolet 1AH57 Styles

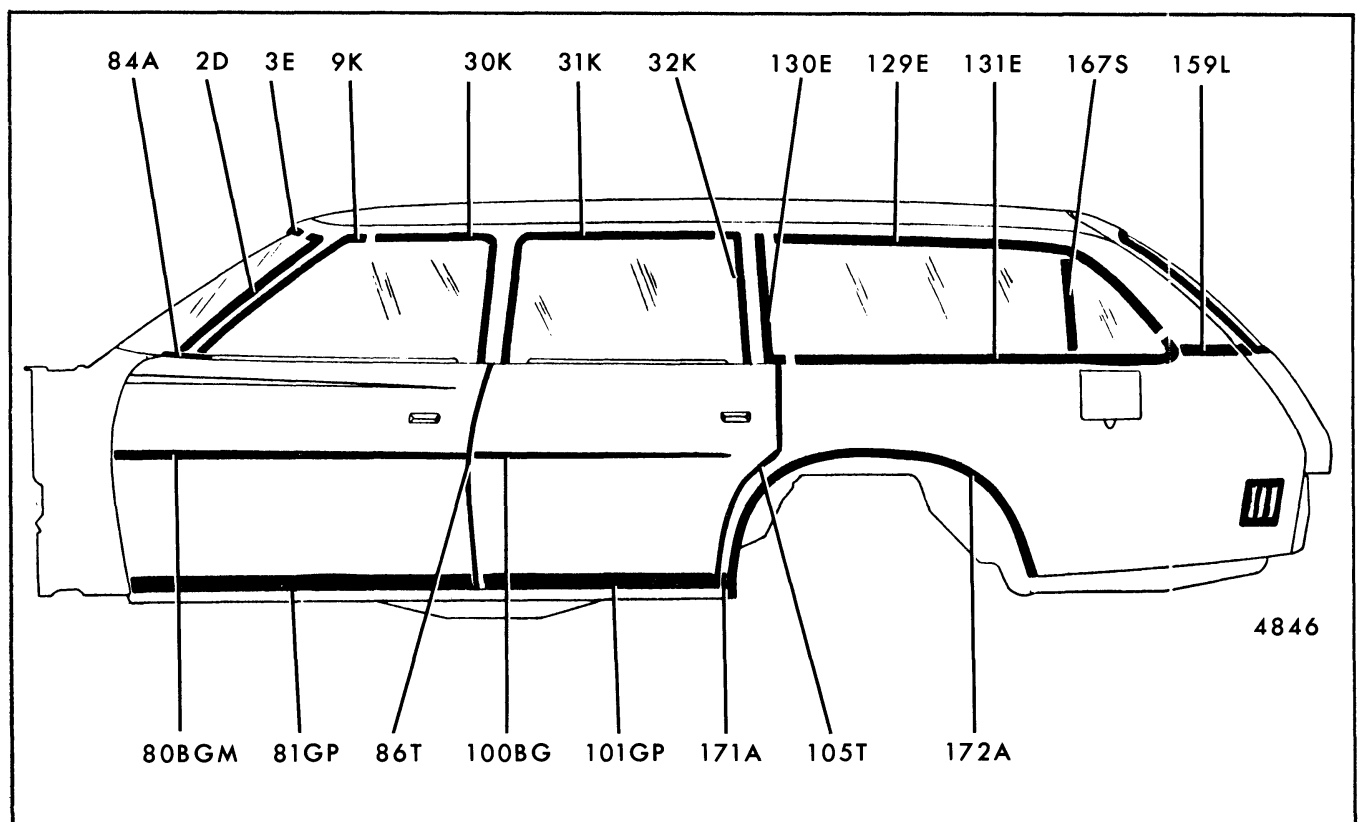


Fig. 11-10-Chevrolet 1AH35 Styles (1AG, 1AE, 1AD, 1AC35 Similar)

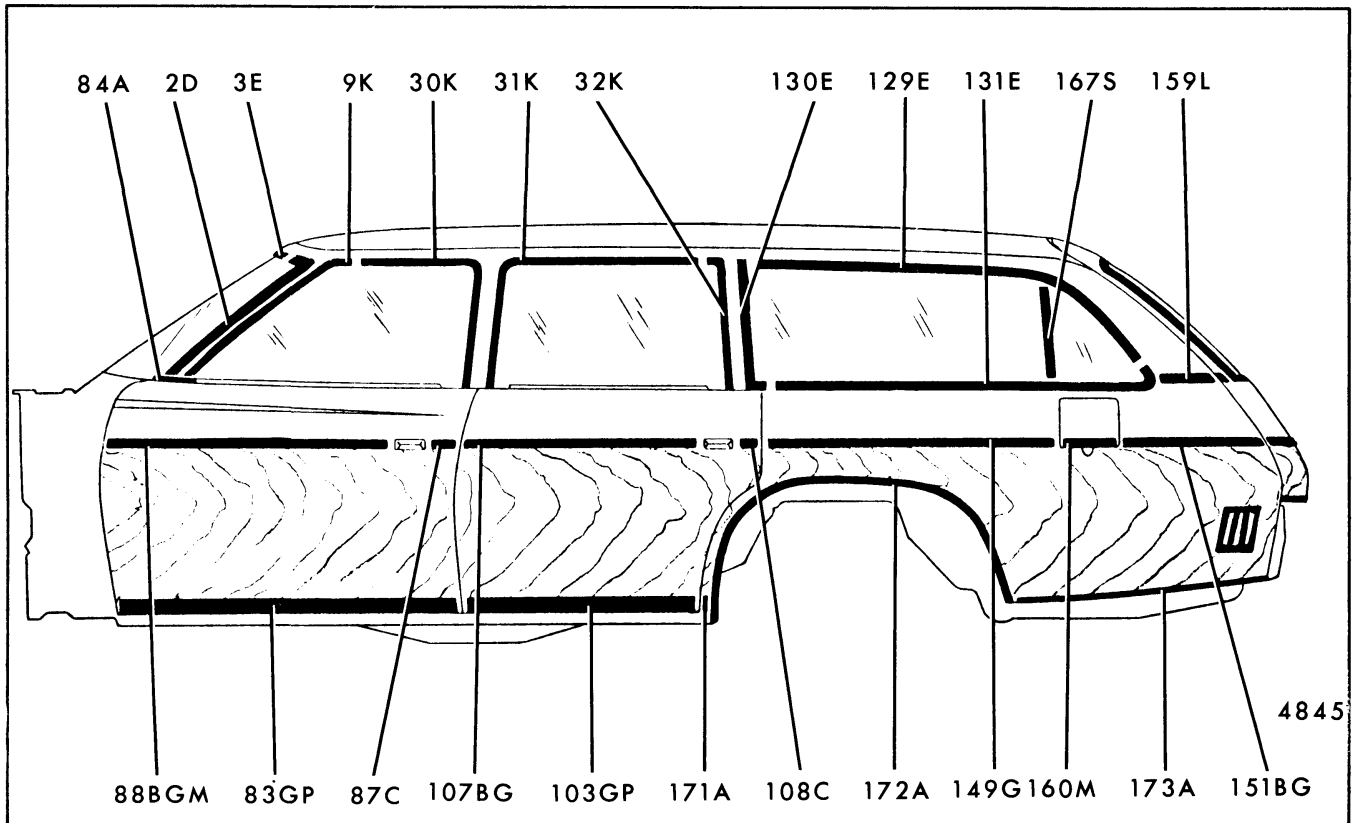


Fig. 11-11-Chevrolet 1AH35 Styles (1AG35 Similar)

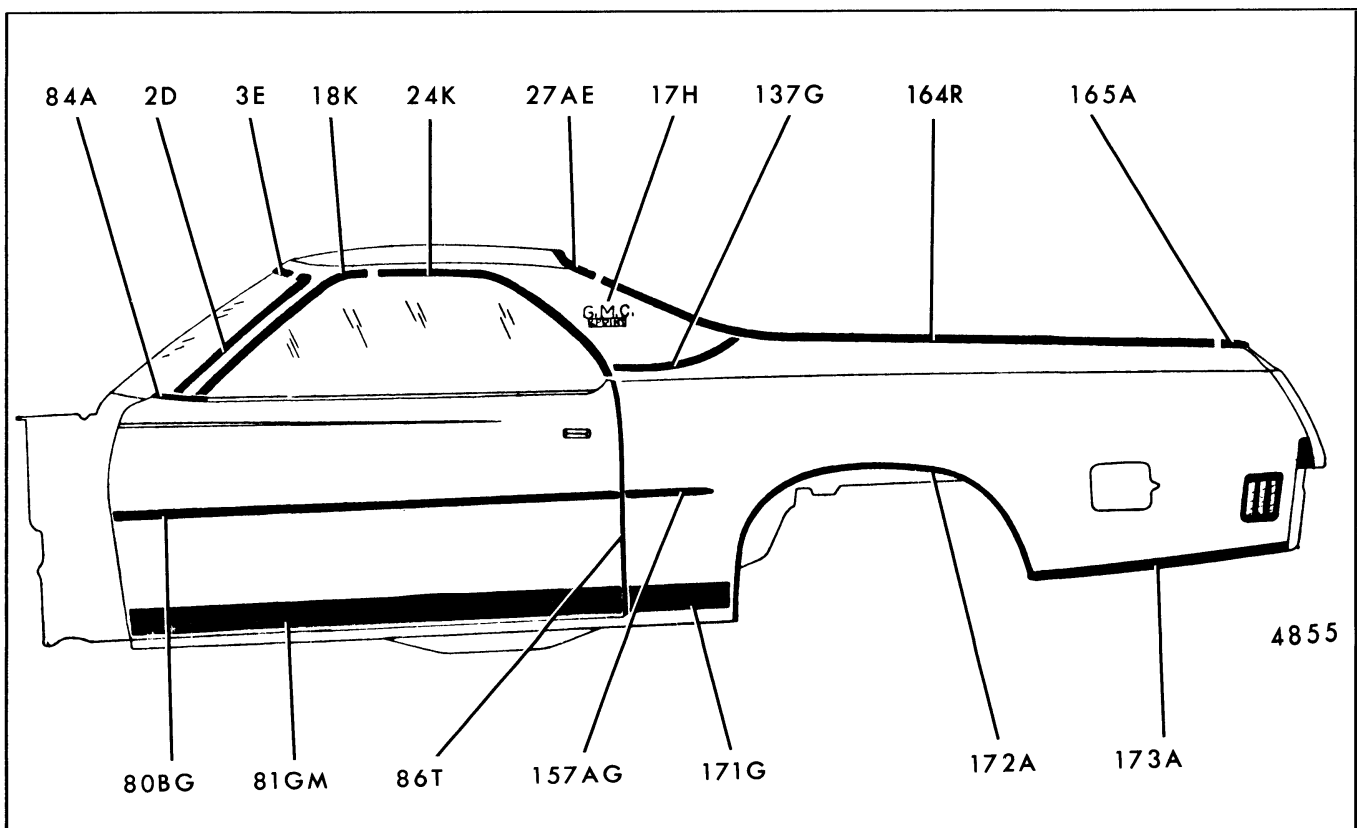


Fig. 11-12-Chevrolet 1AD80 Styles (1AC80, 5AD, 5AC80 Similar)

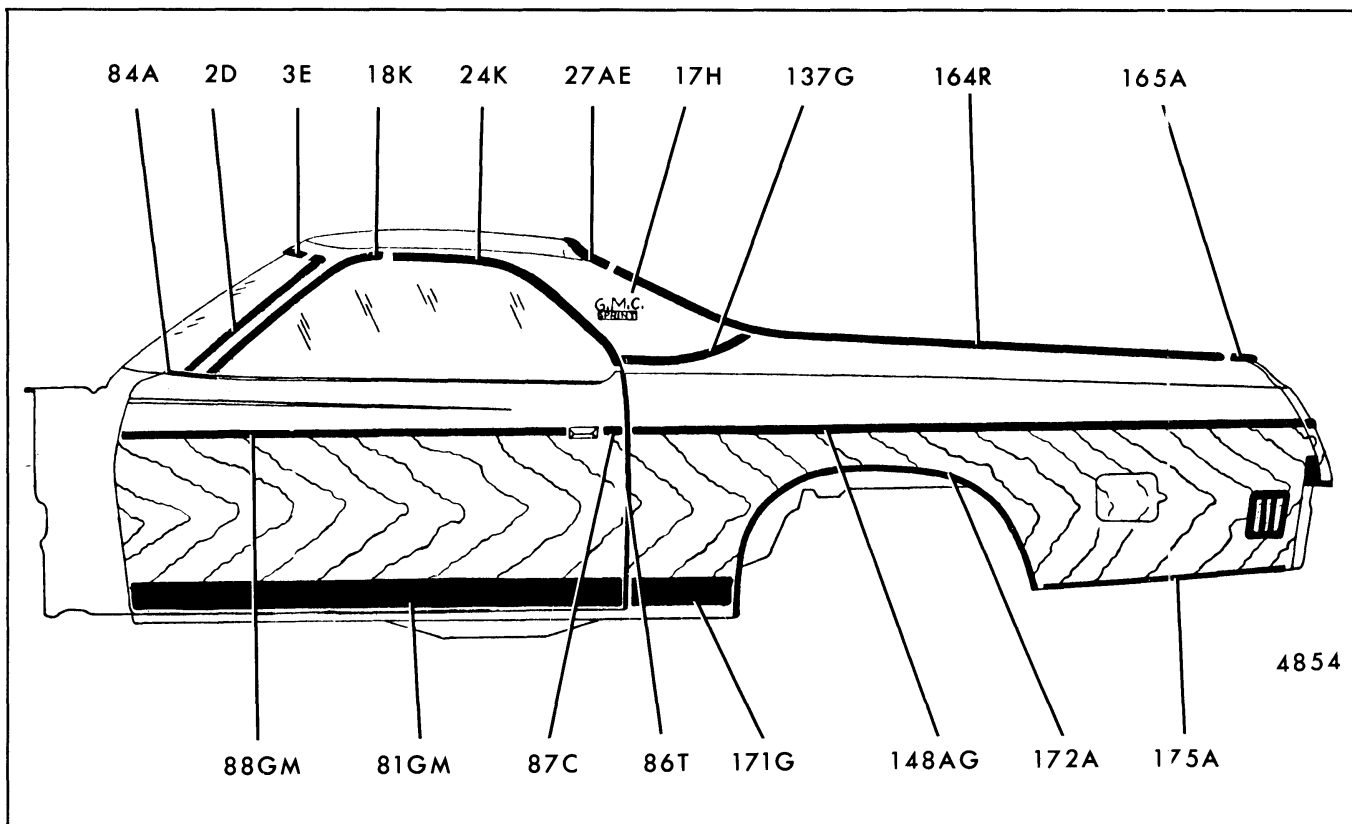


Fig. 11-13-Chevrolet 1AD80 Styles (5AD80 Similar)

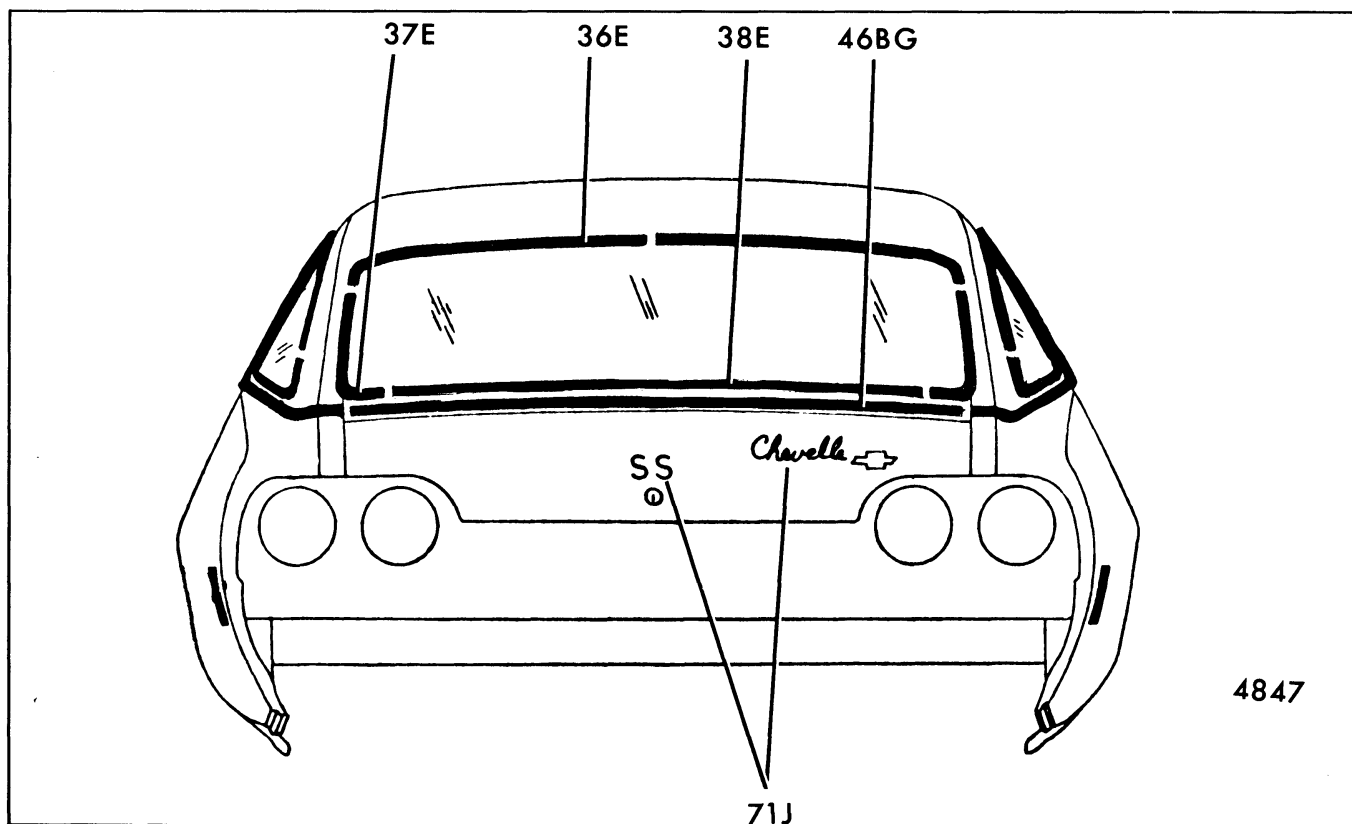


Fig. 11-14-Chevrolet 1AE37 Styles (1AD, 1AC37, 1AE, 1AD, 1AC29 Similar)

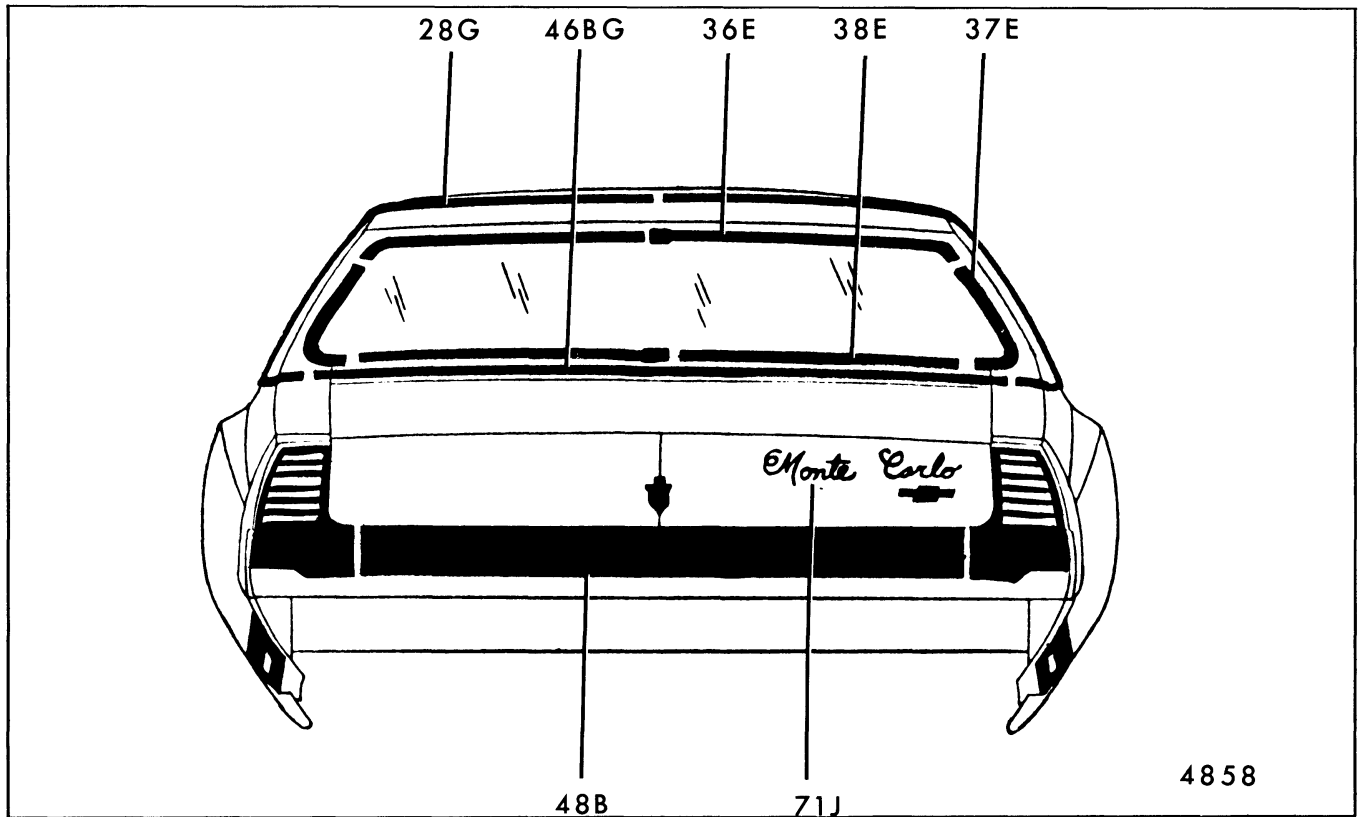


Fig. 11-15-Chevrolet 1AH57 Styles

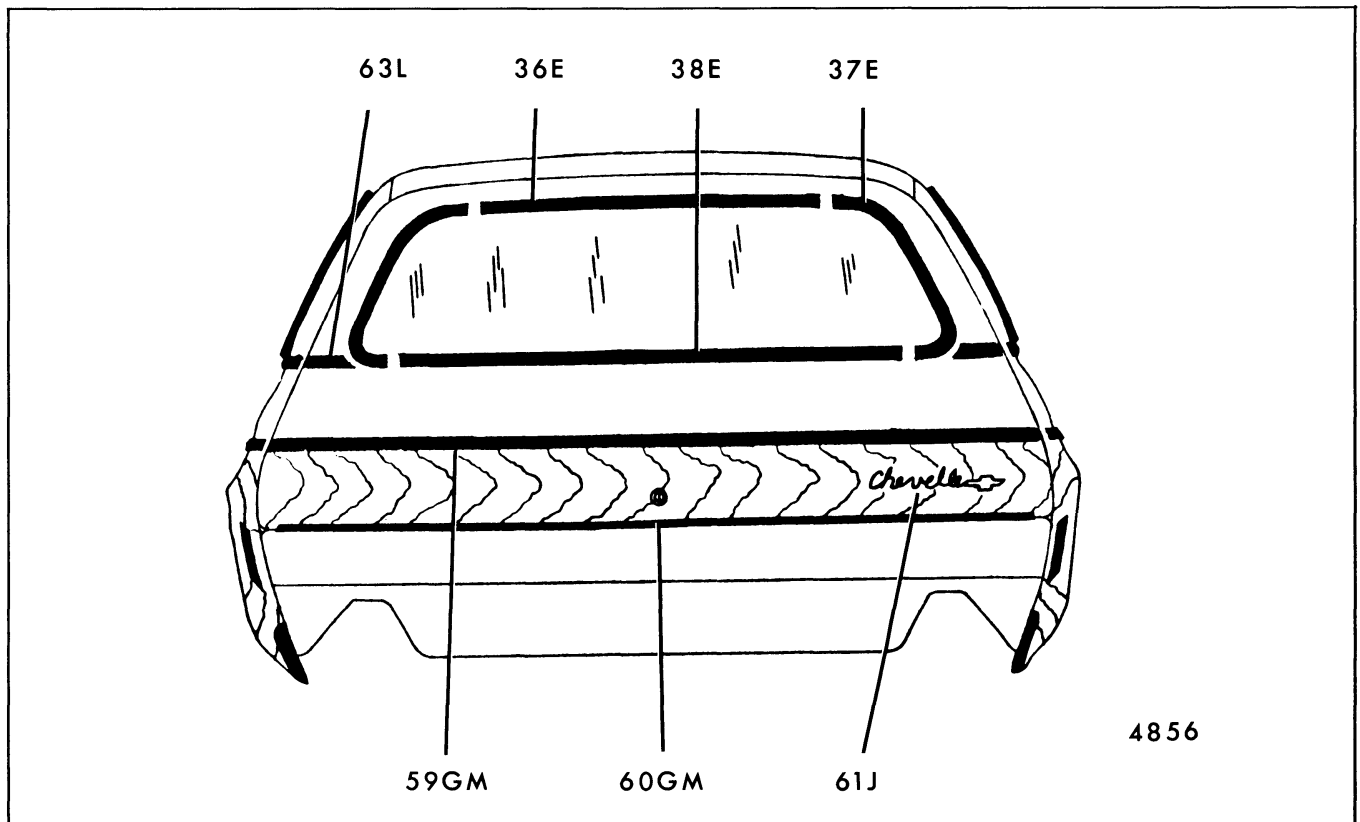


Fig. 11-16-Chevrolet 1AH, 1AG, 1AE, 1AD, 1AC35 Styles

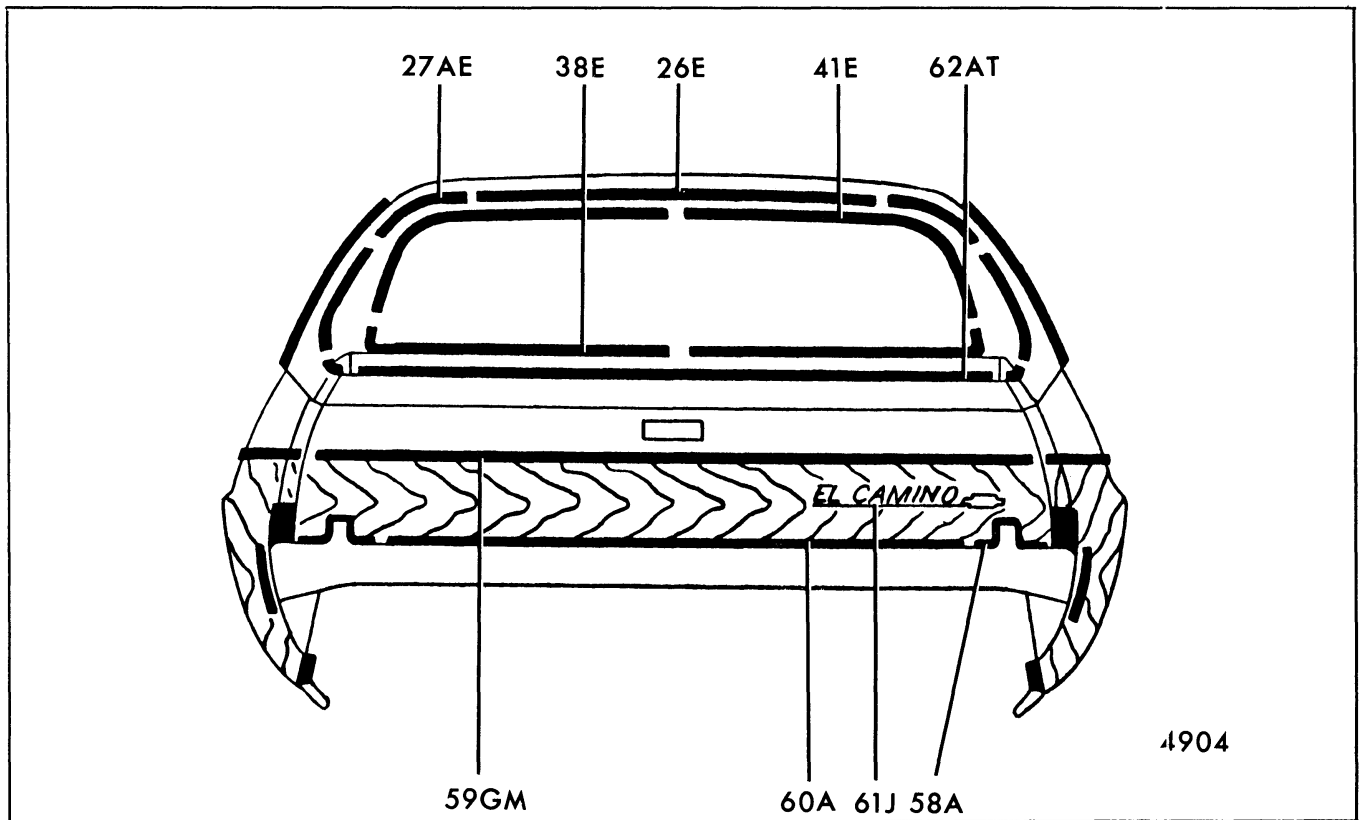


Fig. 11-17-Chevrolet 1AD80 Styles (1AC80, 5AD, 5AC80 Similar)

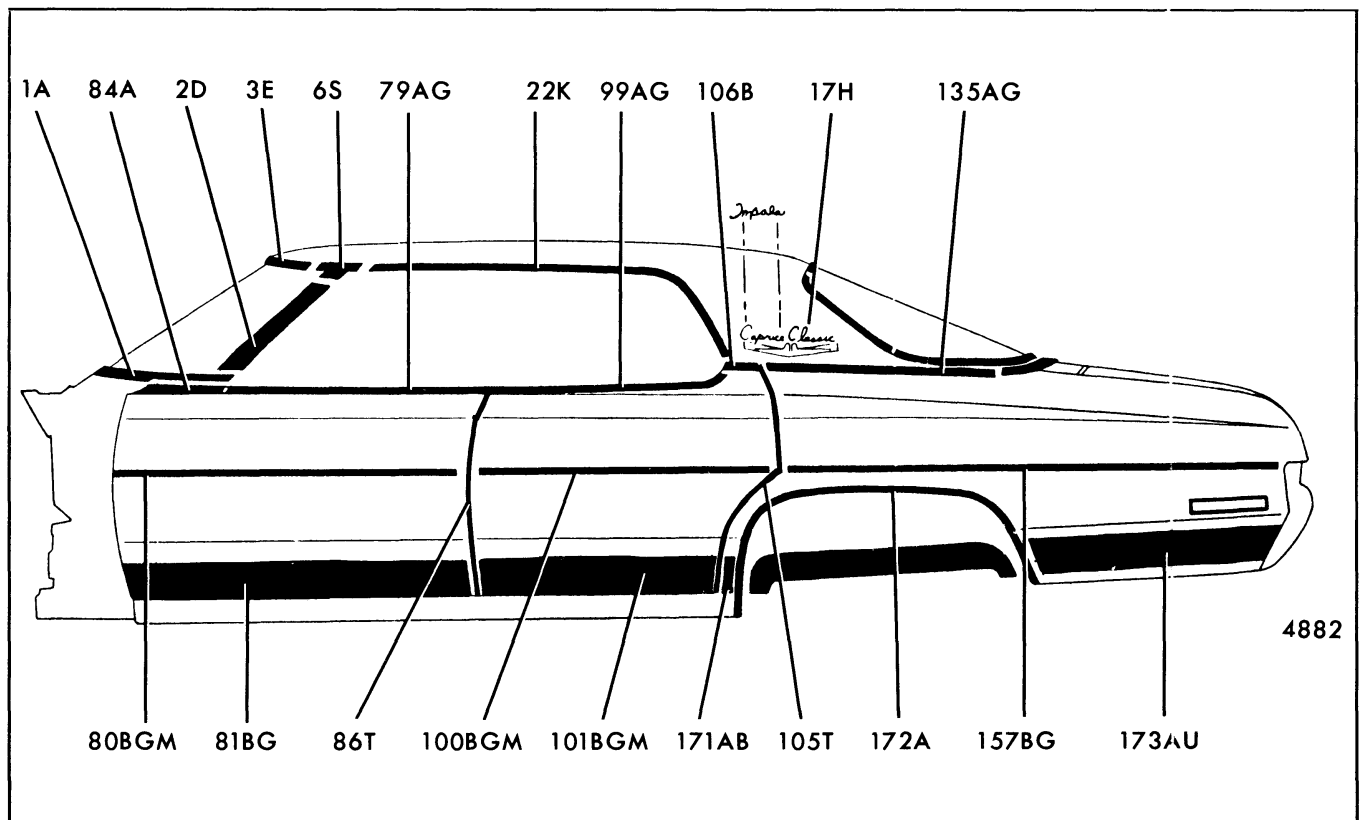


Fig. 11-18-Chevrolet 1BN39 Styles (1BL39 Similar)



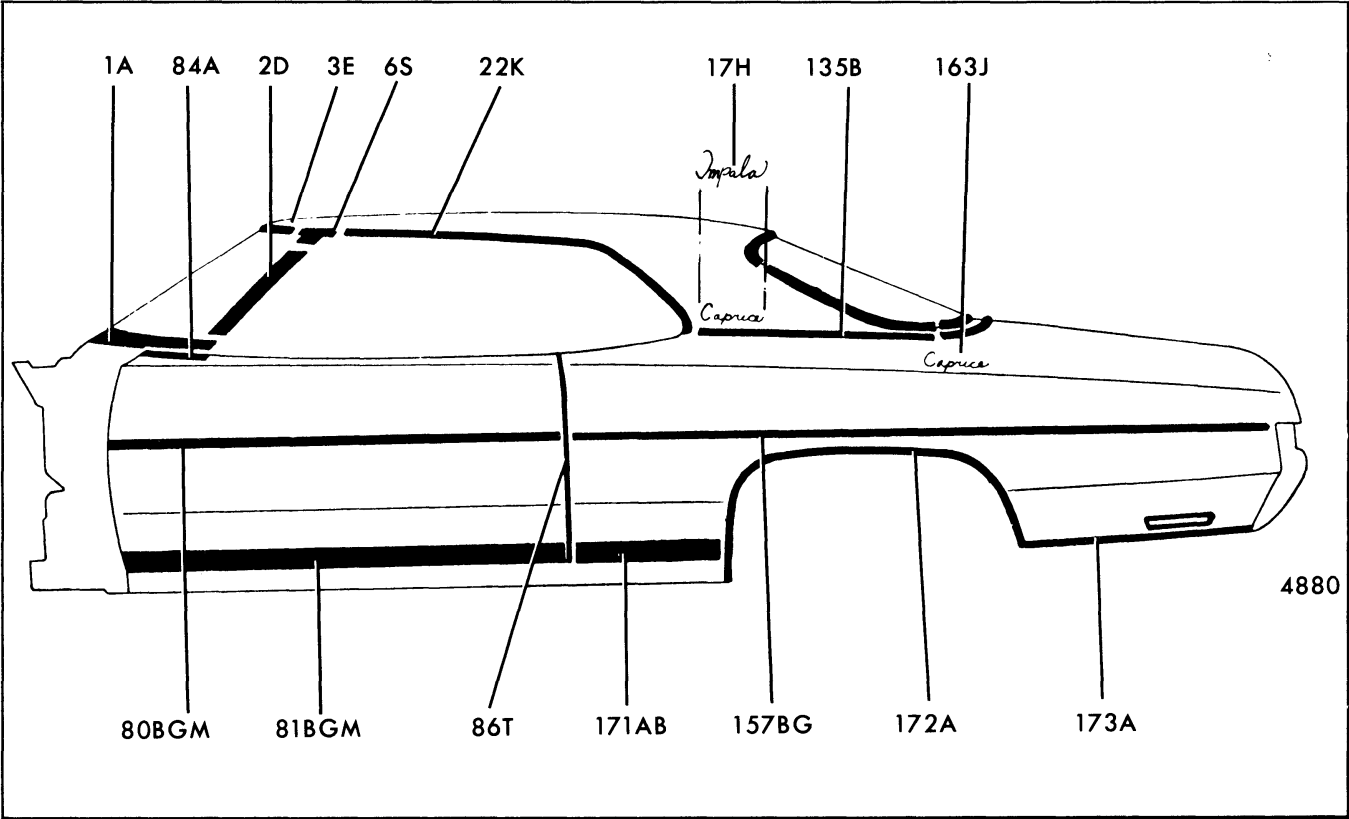


Fig. 11-19-Chevrolet 1BN47 Styles (1BN67, 1BL47 Similar)

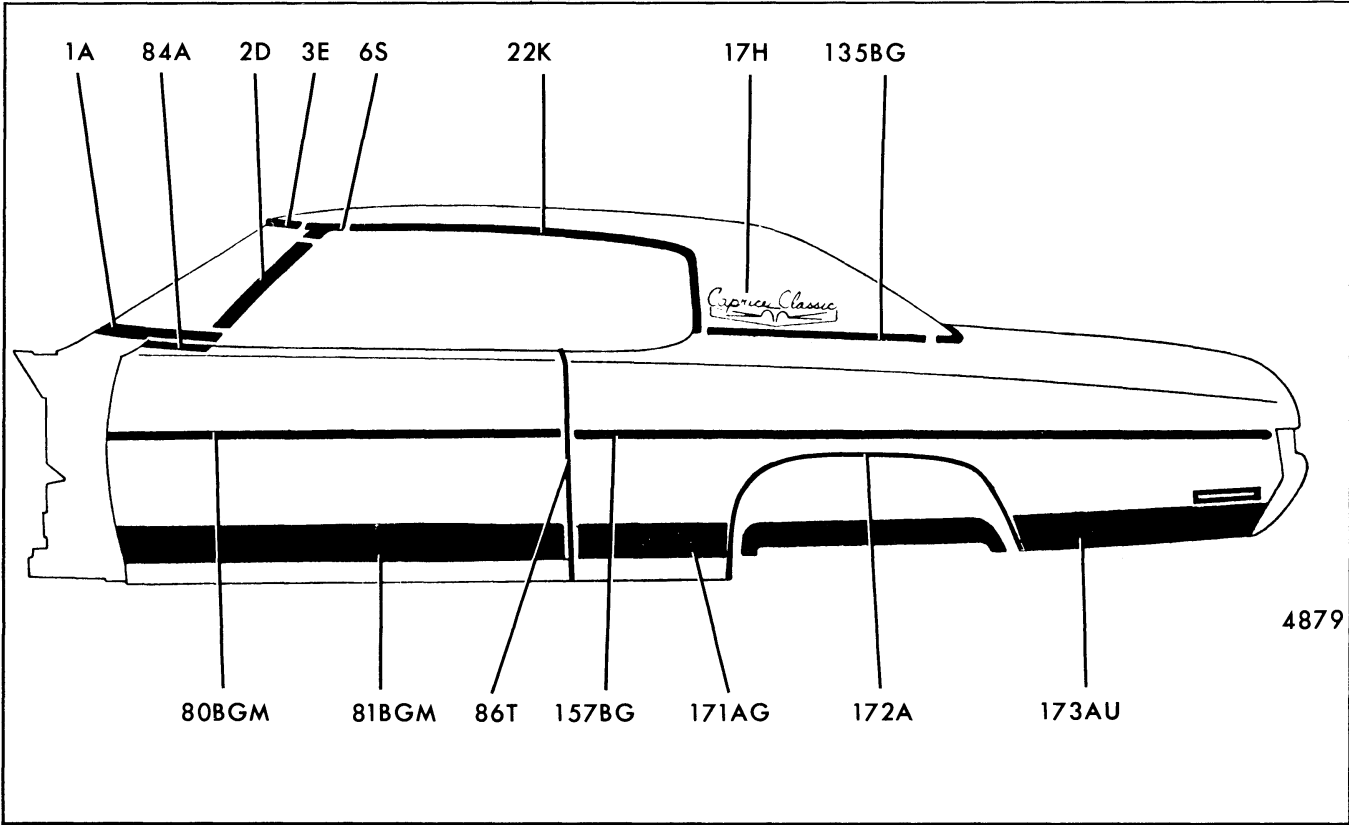


Fig. 11-20-Chevrolet 1BL57 Styles

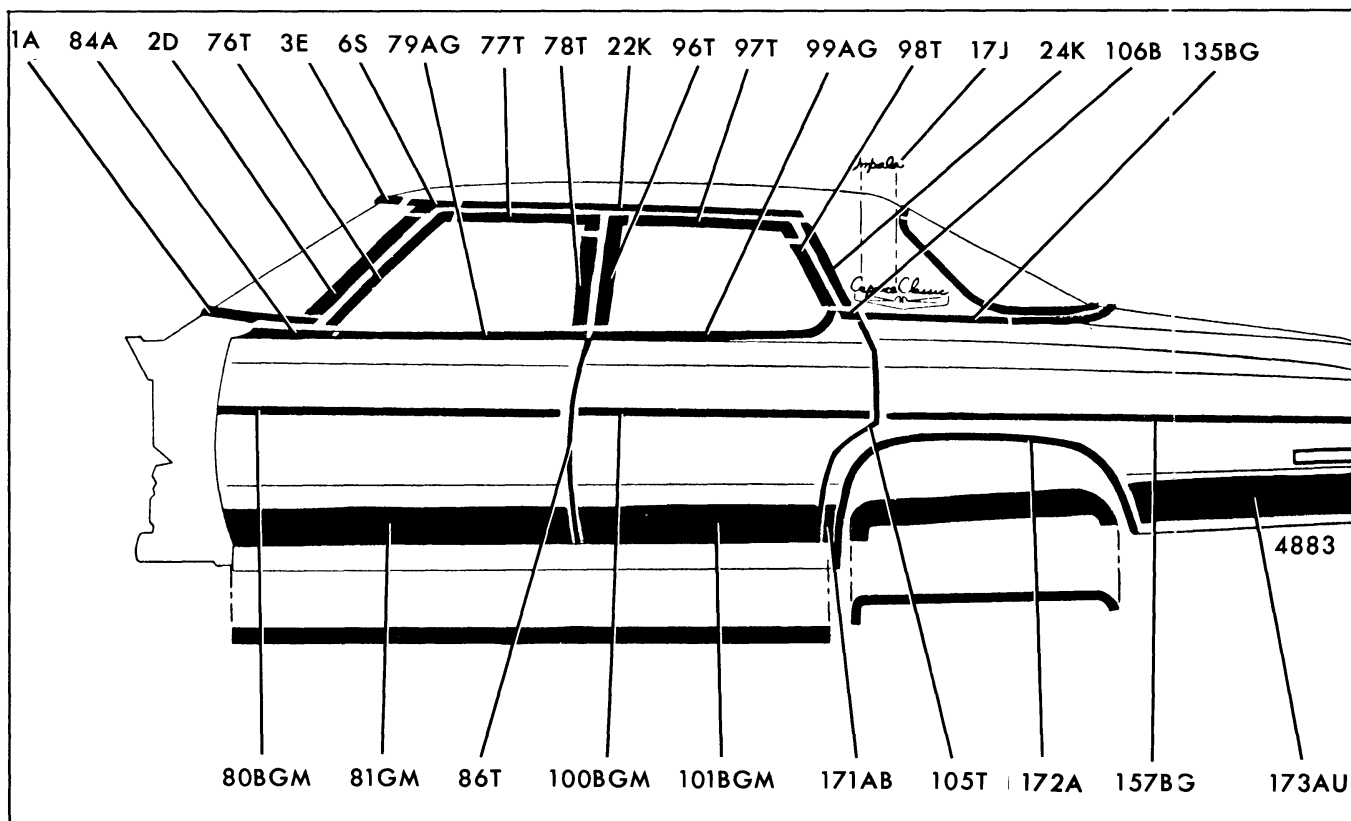


Fig. 11-21-Chevrolet 1BN69 Styles (1BL, 1BK69 Similar)

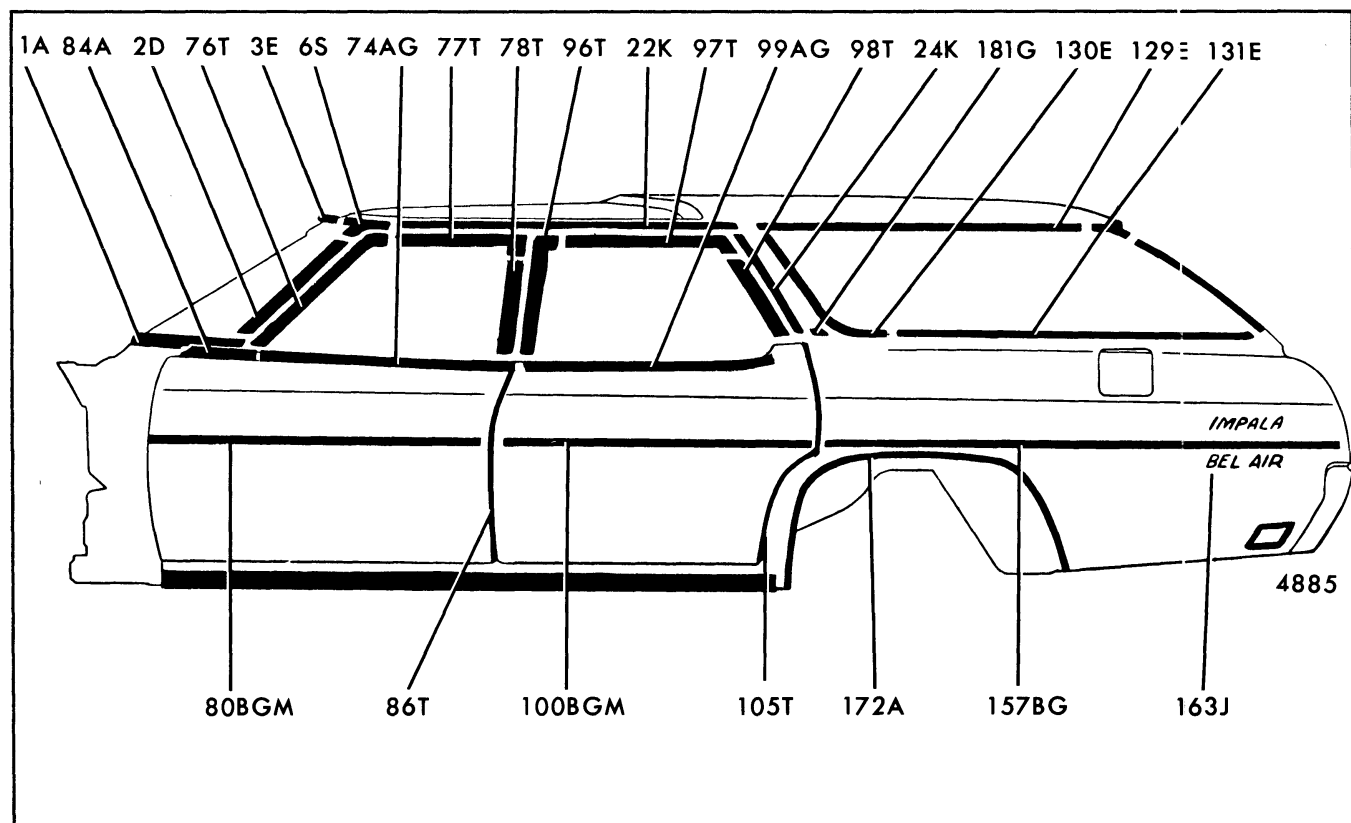


Fig. 11-22-Chevrolet 1BL45 Styles (1BL35, 1BK35-45 Similar)

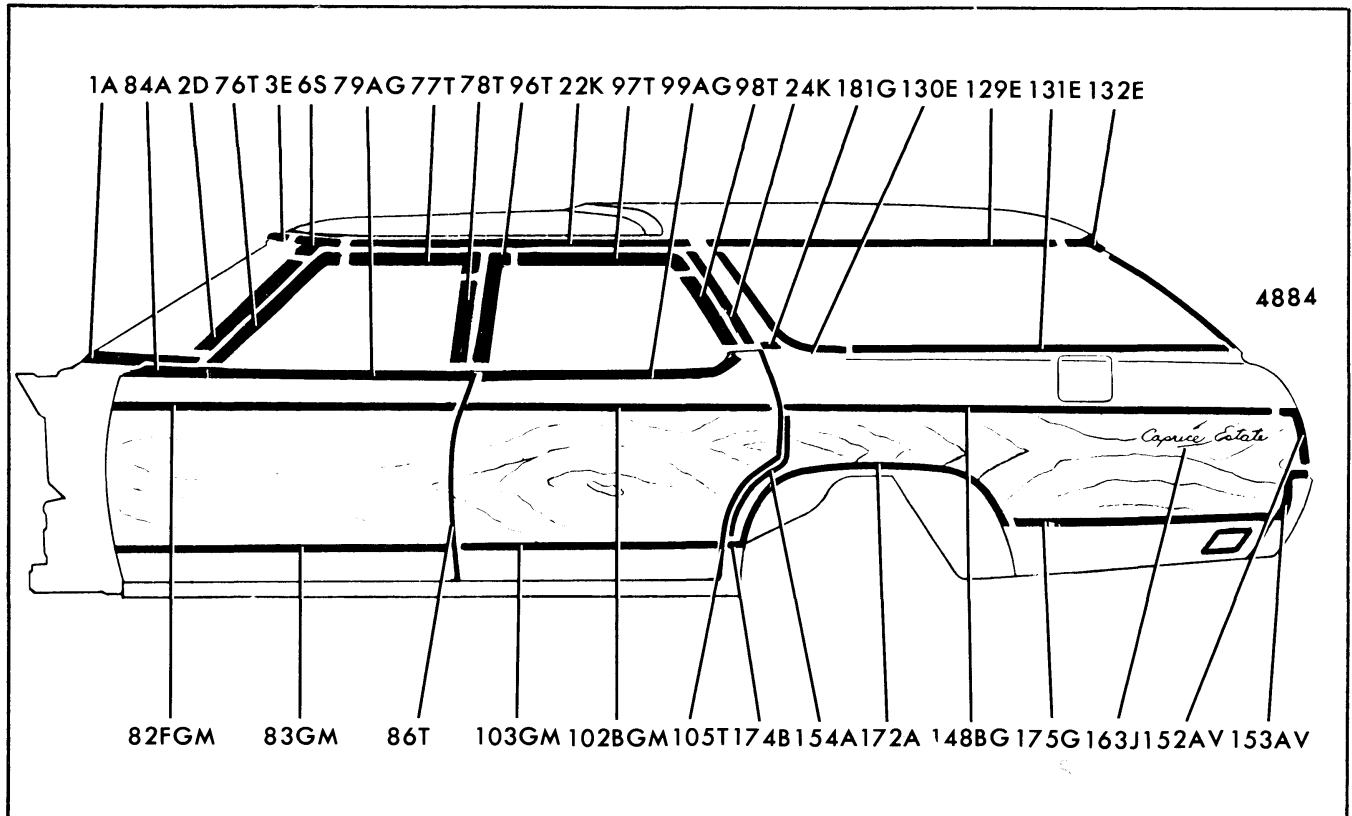


Fig. 11-23-Chevrolet 1BN45 Styles (1BN35 Similar)

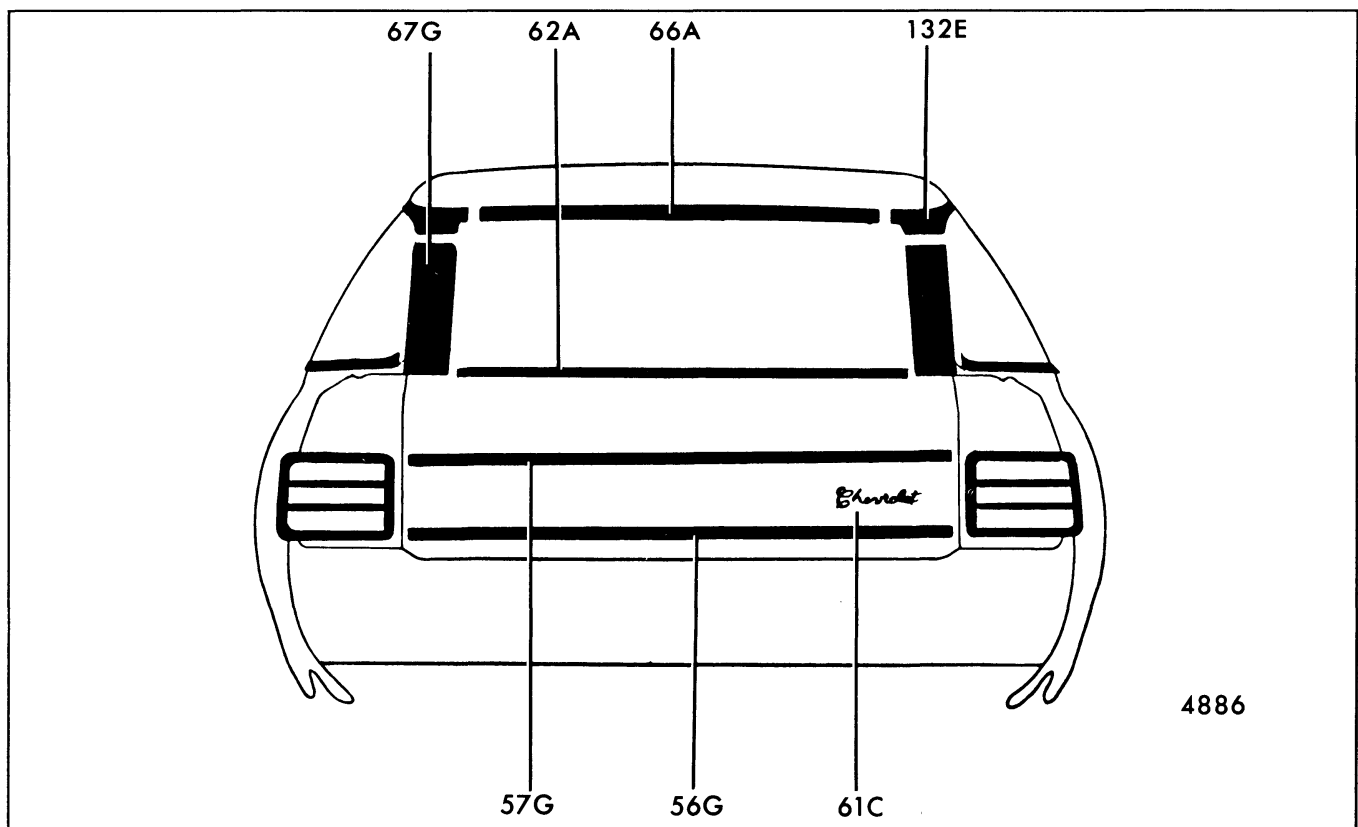


Fig. 11-24-Chevrolet 1BL45 Styles (1BL35, 1BK35-45 Similar)

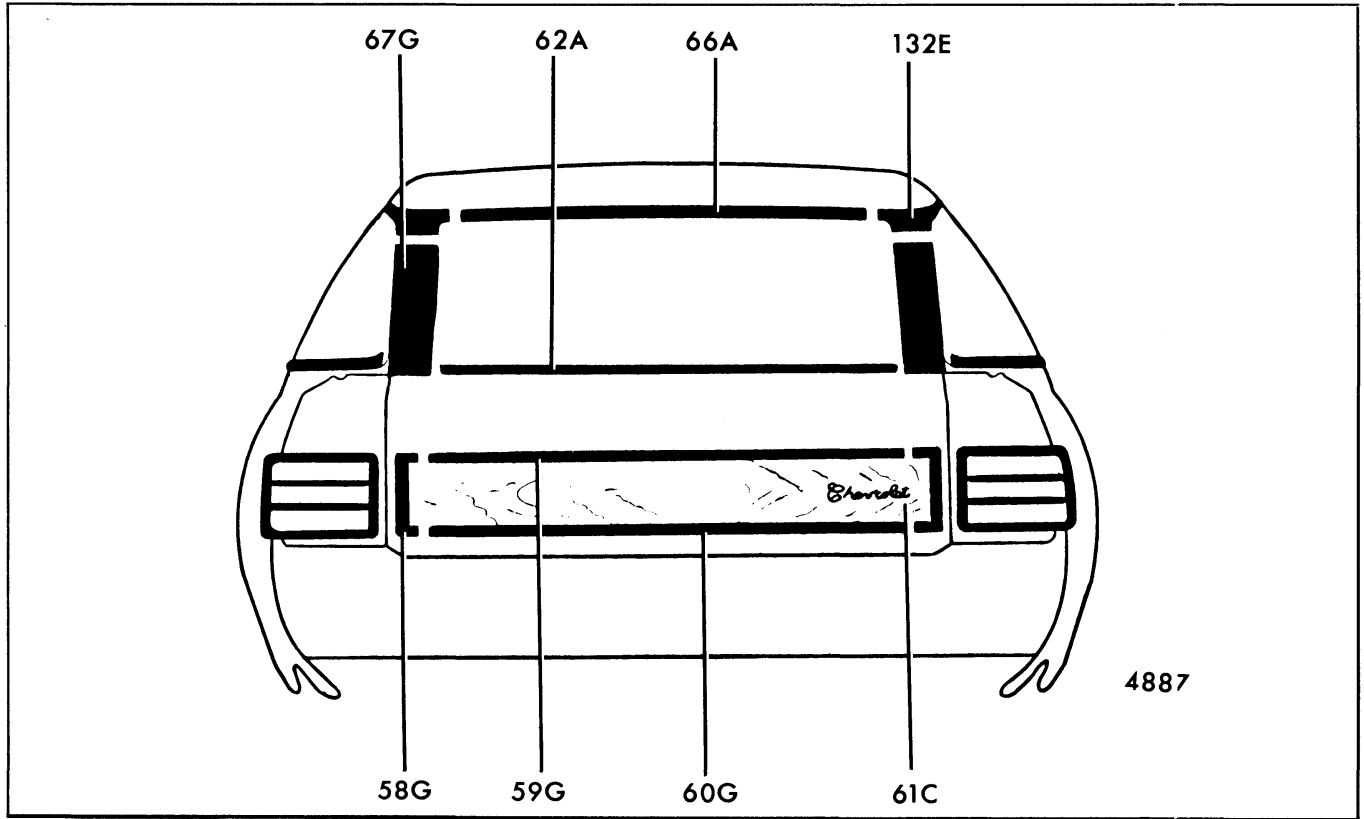


Fig. 11-25-Chevrolet 1BN45 Syles (1BN35 Similar)

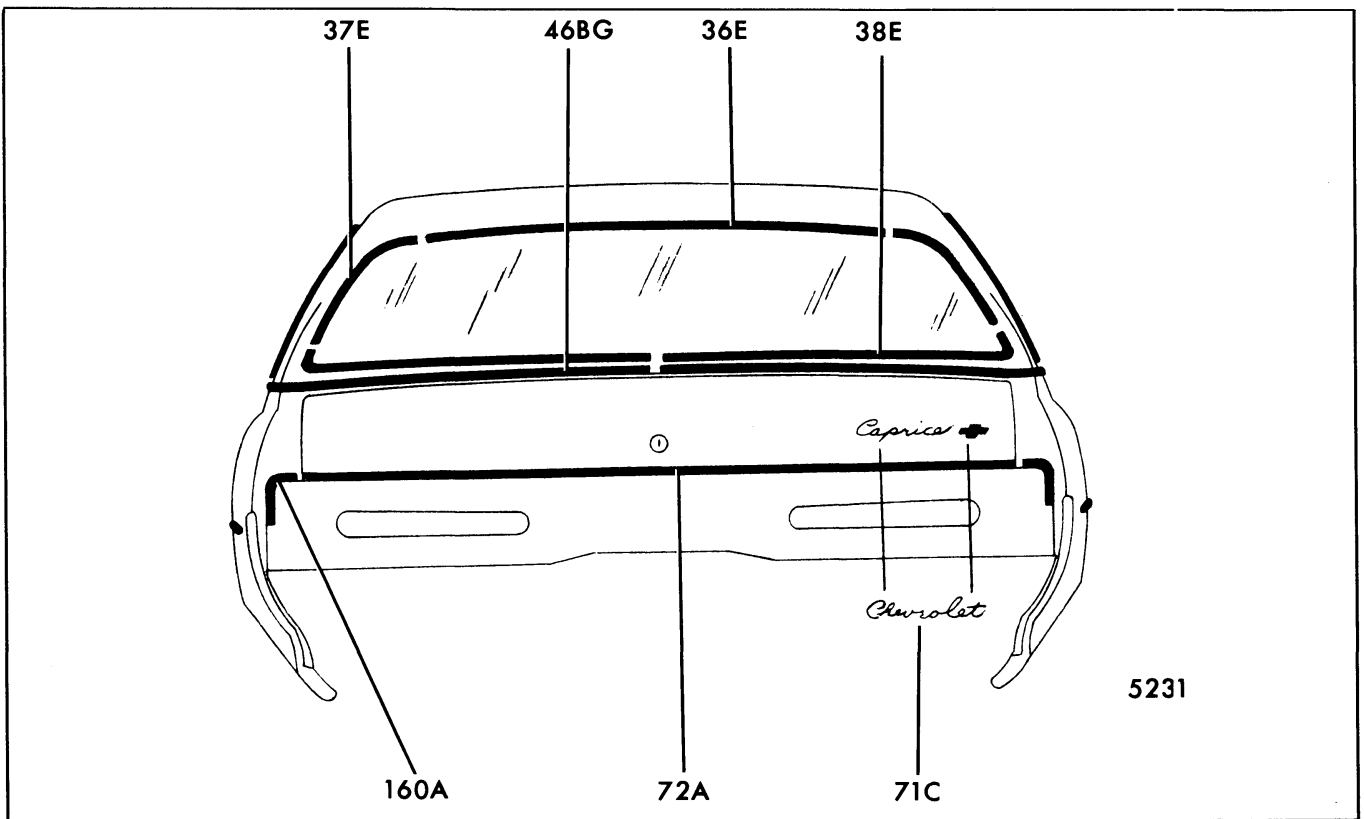


Fig. 11-26-Chevrolet 1BN, 1BL, 1BK (All Except Station Wagons)

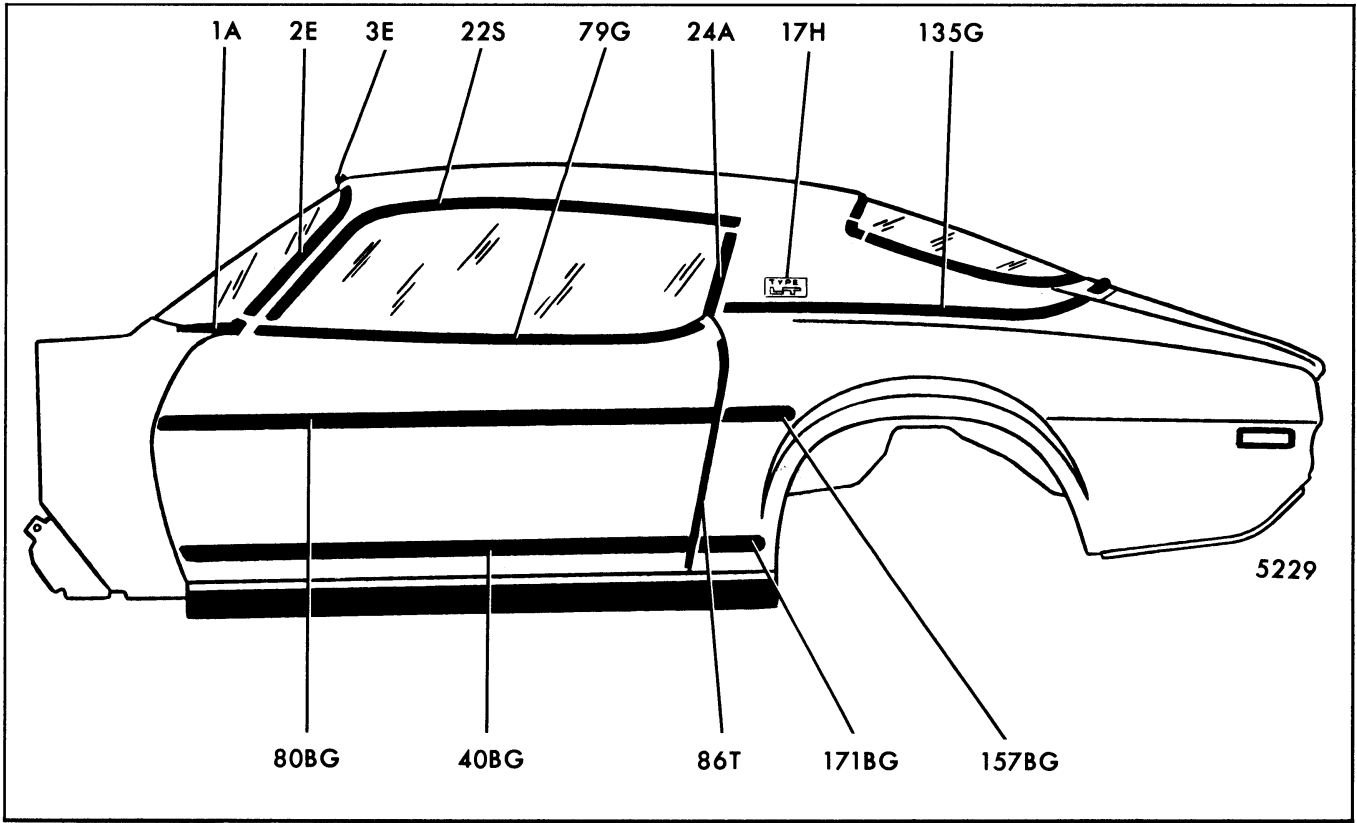


Fig. 11-27-Chevrolet 1FS87 Styles (1FQ87 Similar)

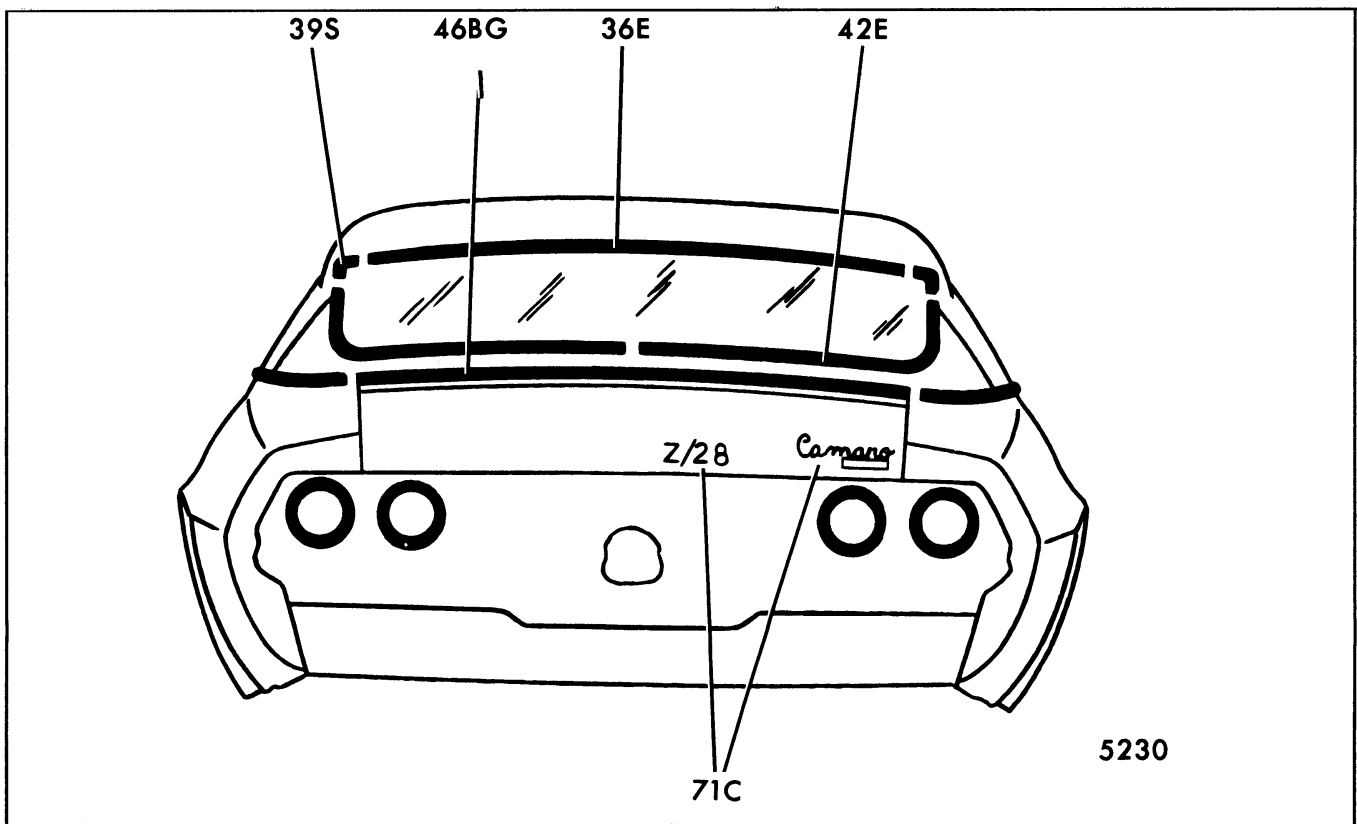


Fig. 11-28-Chevrolet 1FS87 Styles (1FQ87 Similar)

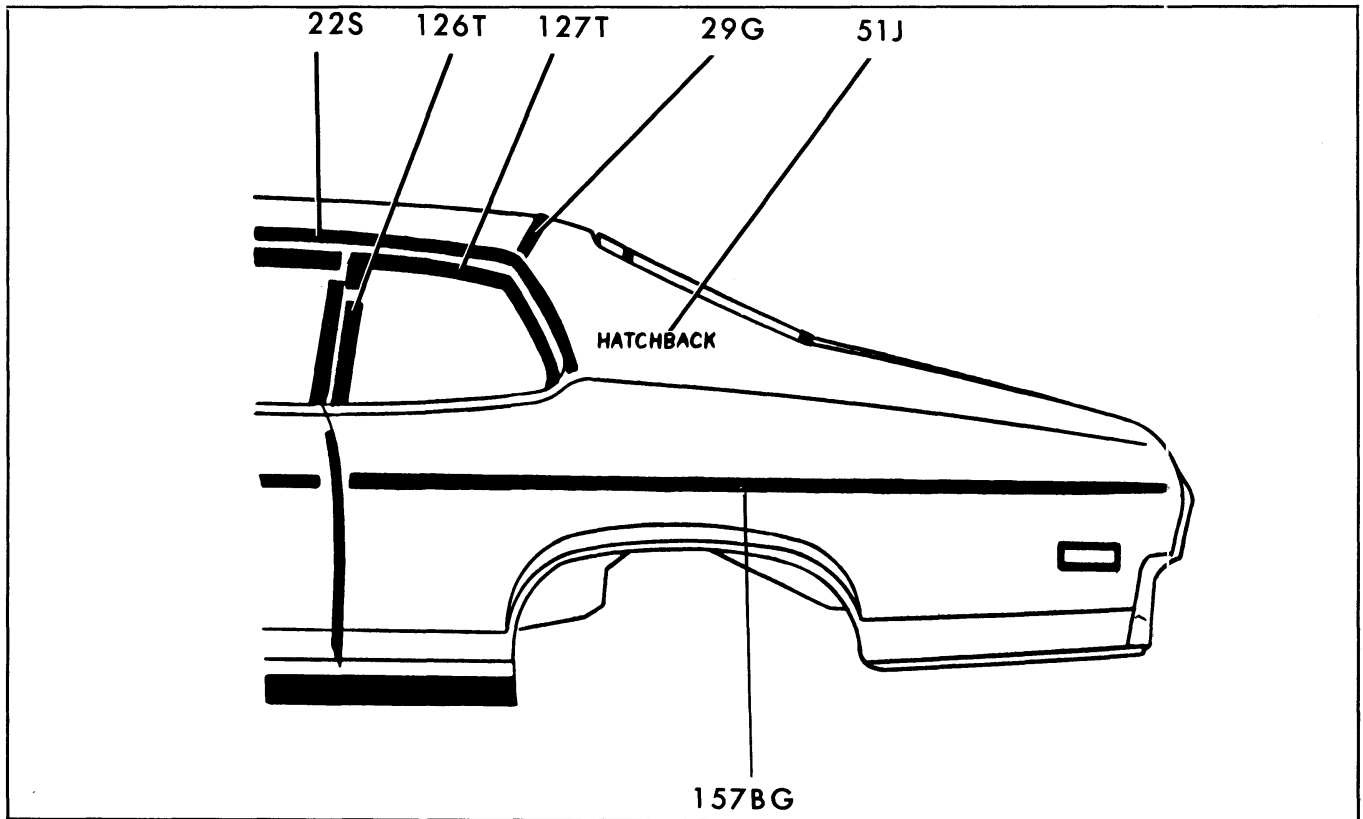


Fig. 11-29-Chevrolet 1XY17 Styles (1XX17 Similar)

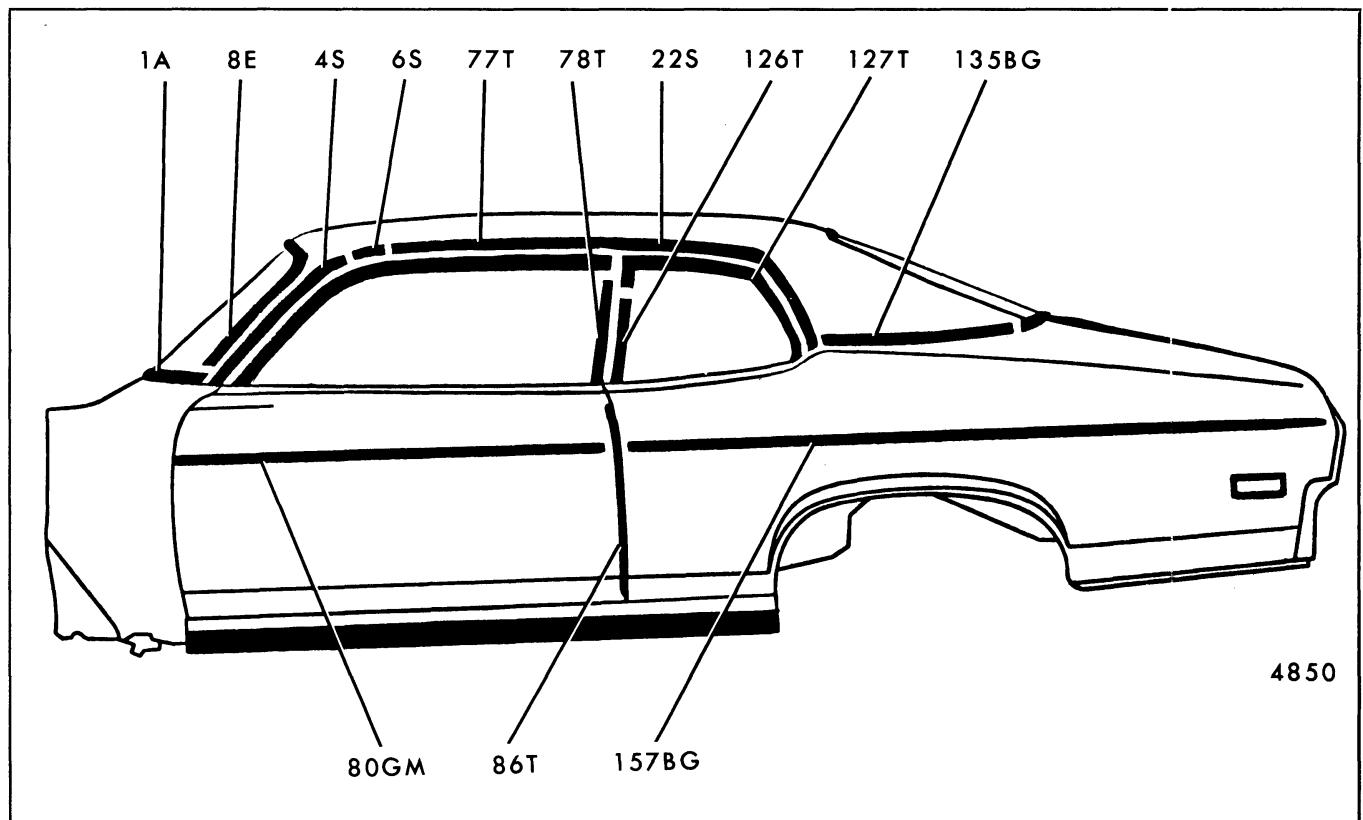


Fig. 11-30-Chevrolet 1XY27 Styles (1XX27 Similar)

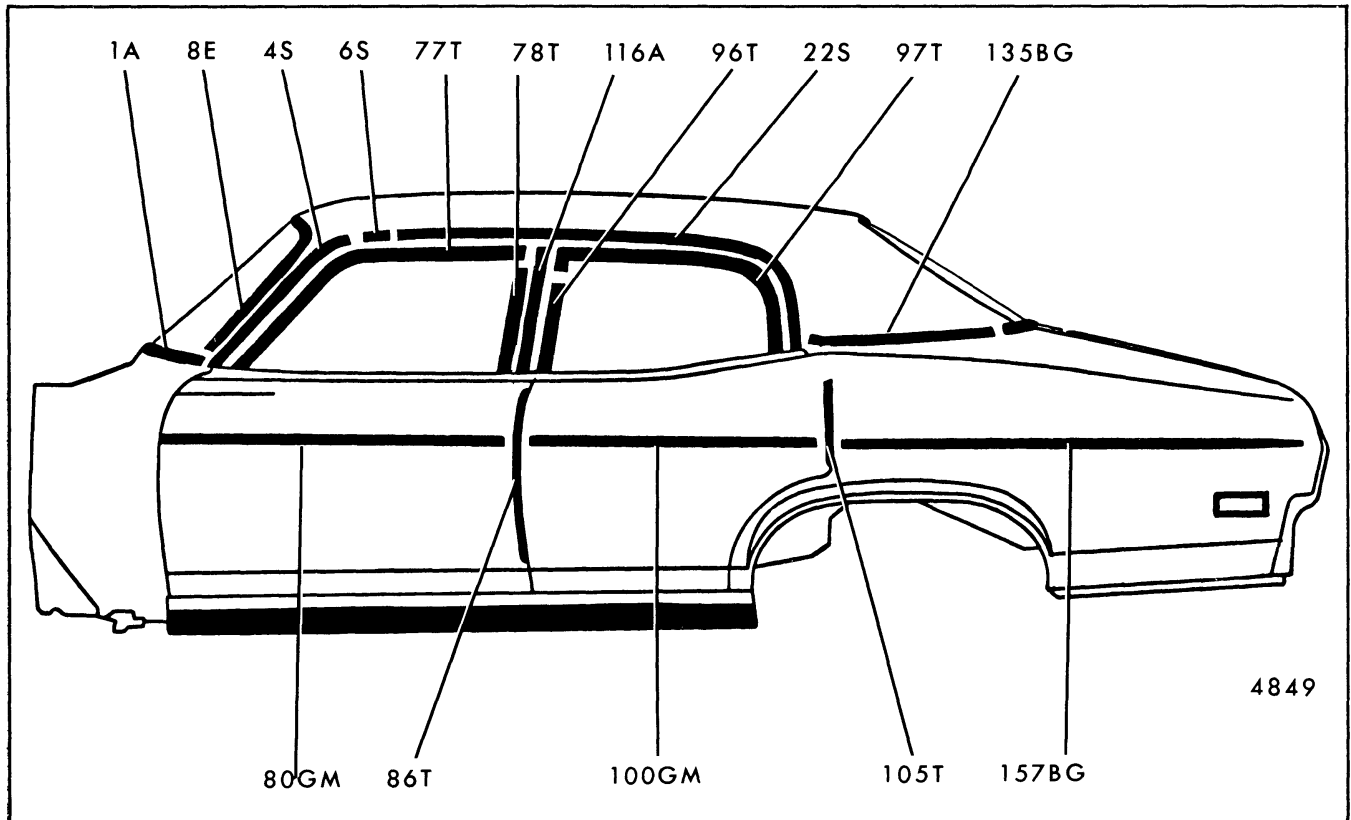


Fig. 11-31-Chevrolet 1XY69 Styles (1XX69 Similar)

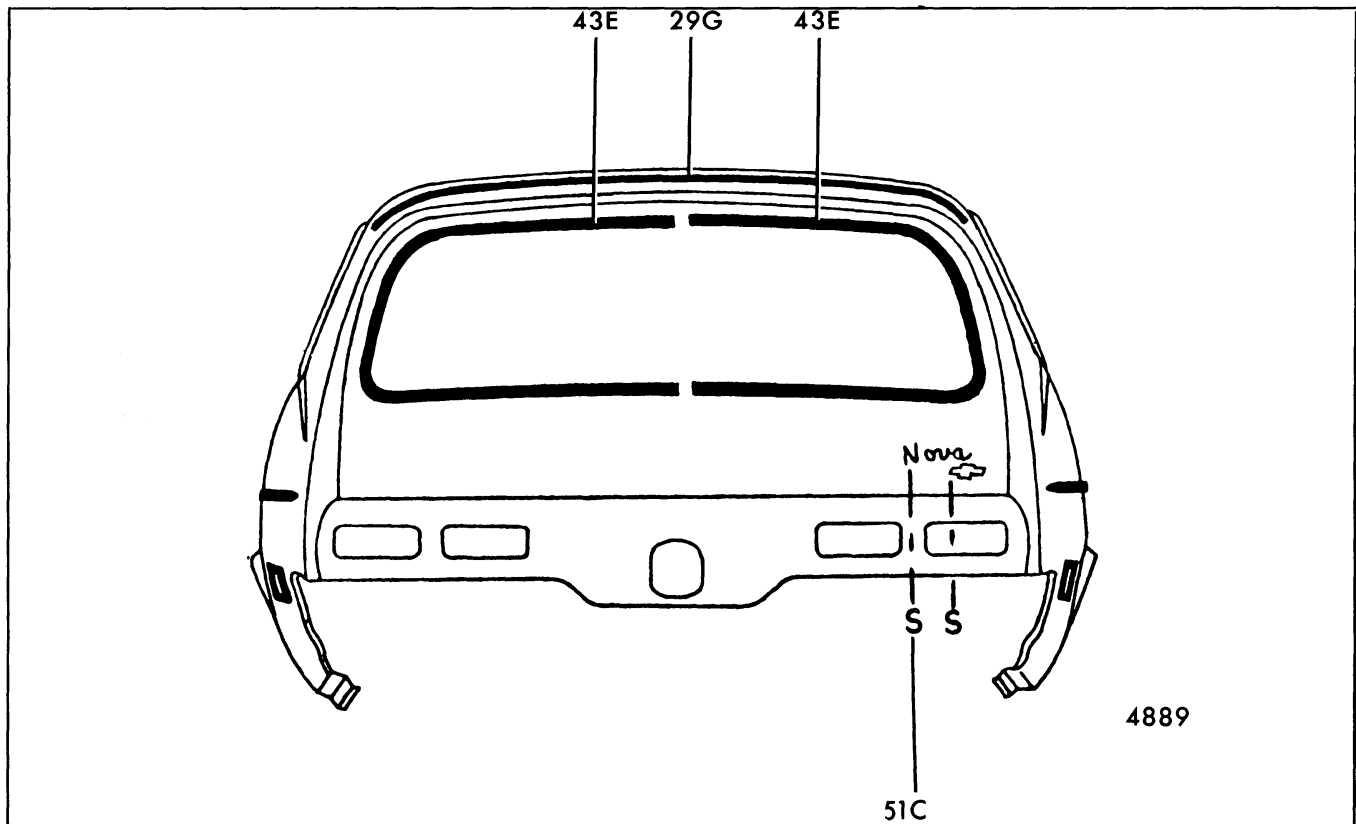


Fig. 11-32-Chevrolet 1XY17 Styles (1XX17 Similar)

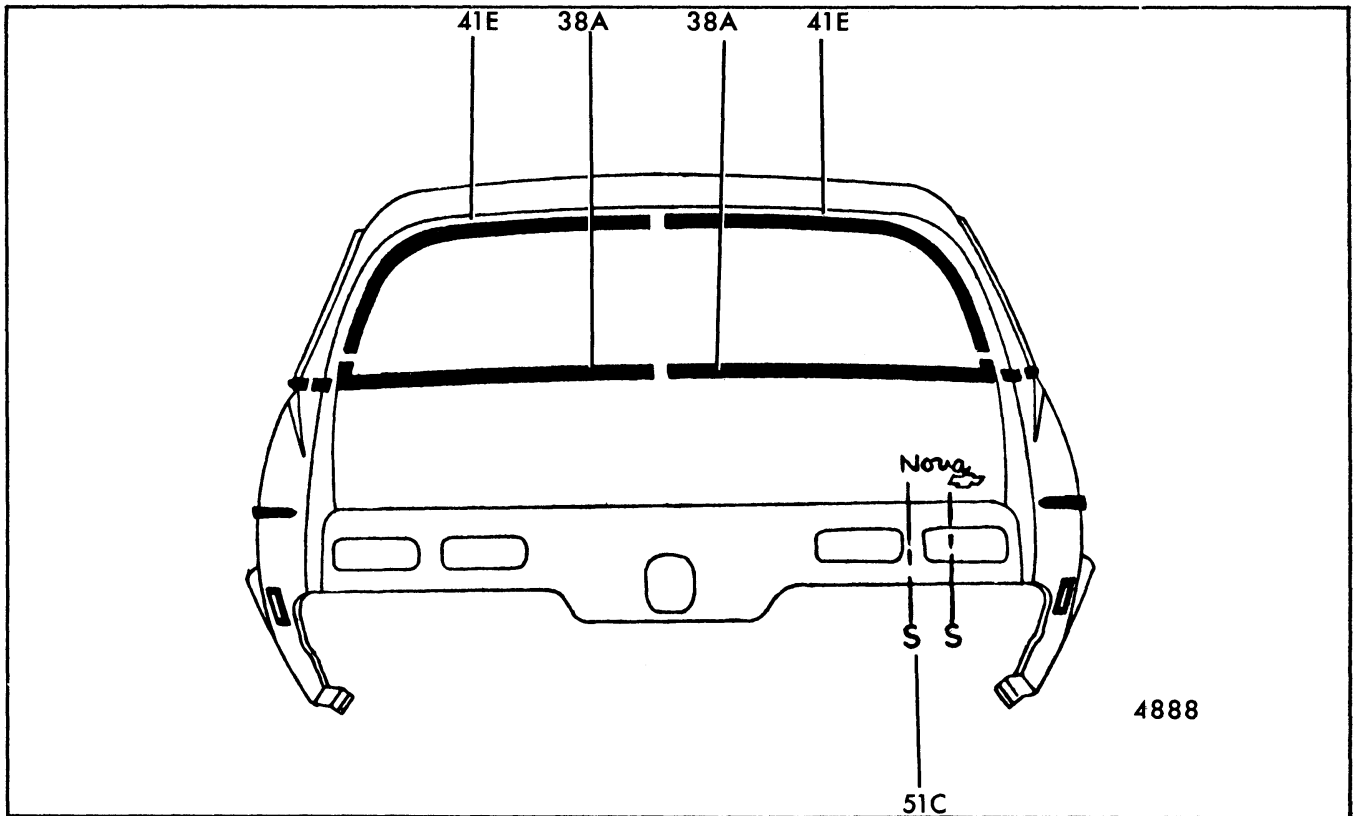


Fig. 11-33-Chevrolet 1XY27 Styles (1XX27, 1XY, 1XX69 Similar)

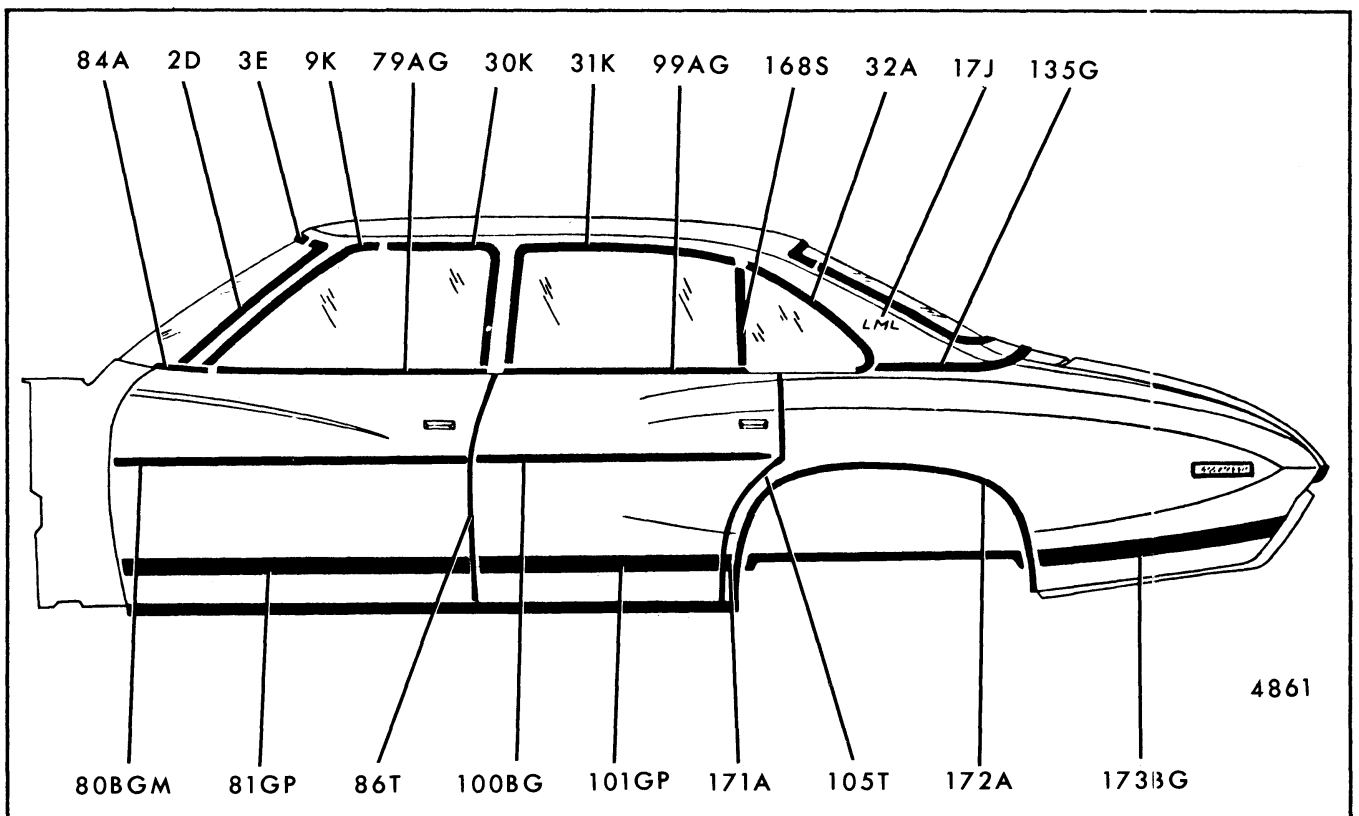


Fig. 11-34-Pontiac 2AH29 Styles (2AG, 2AD29 Similar)



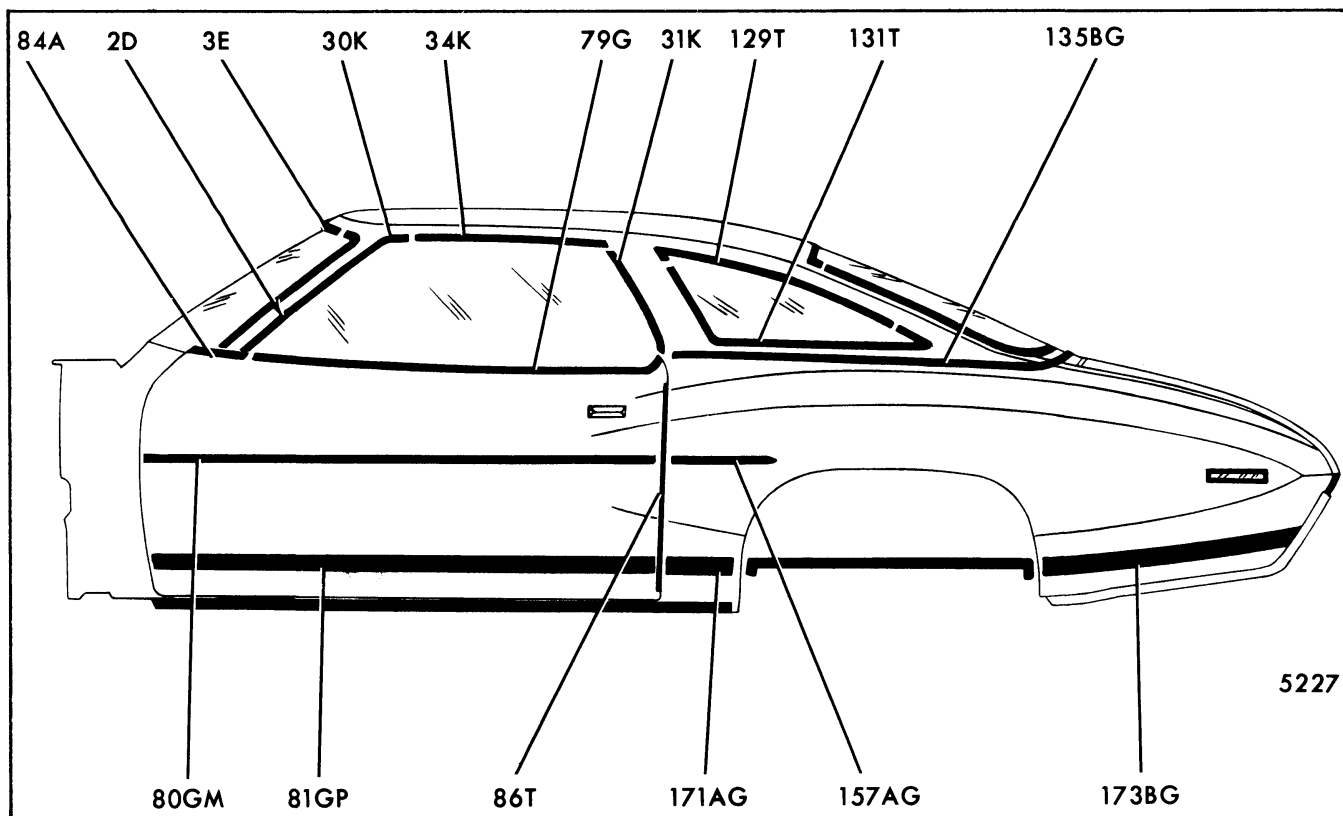


Fig. 11-35-Pontiac 2AG37 Styles (2AF, 2AD37 Similar)

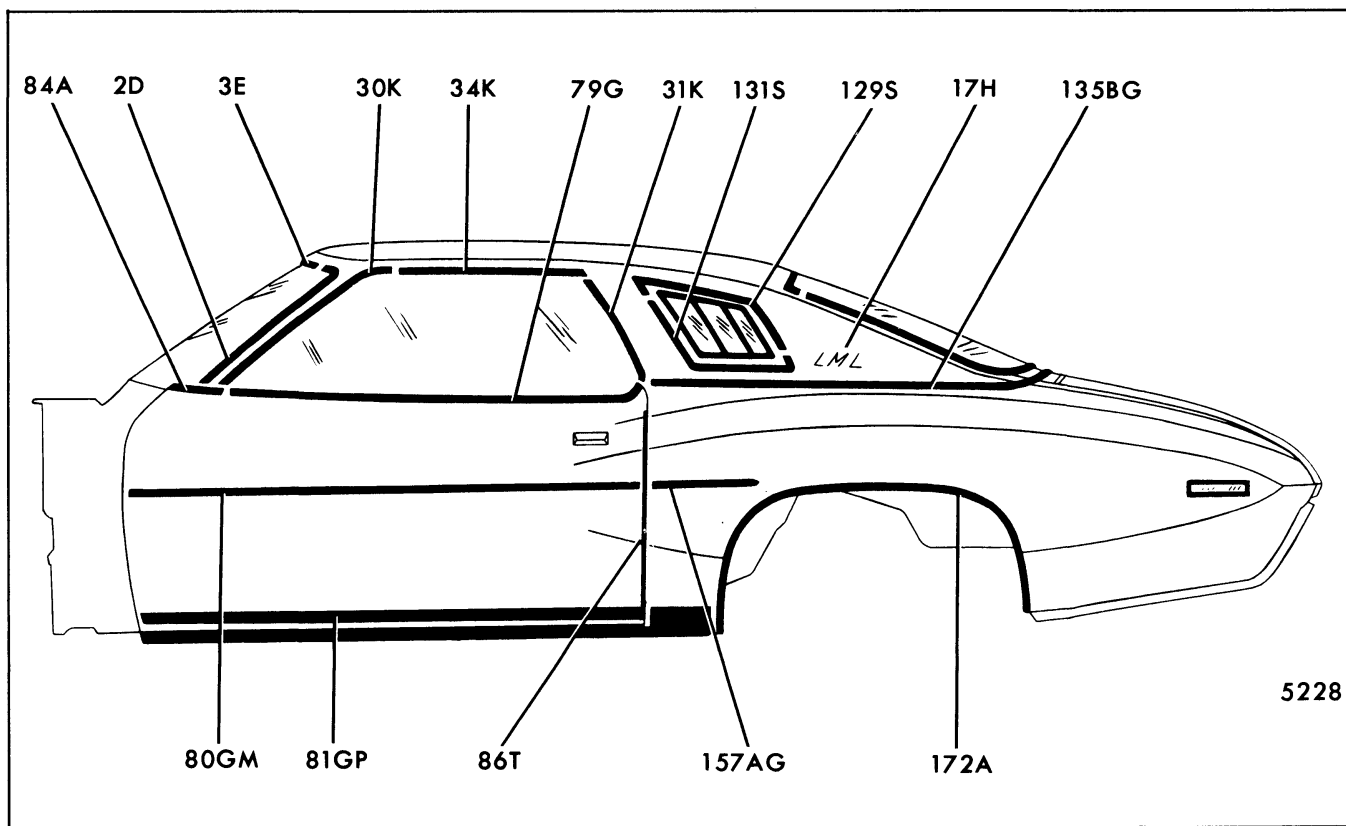


Fig. 11-36-Pontiac 2AH37 Styles

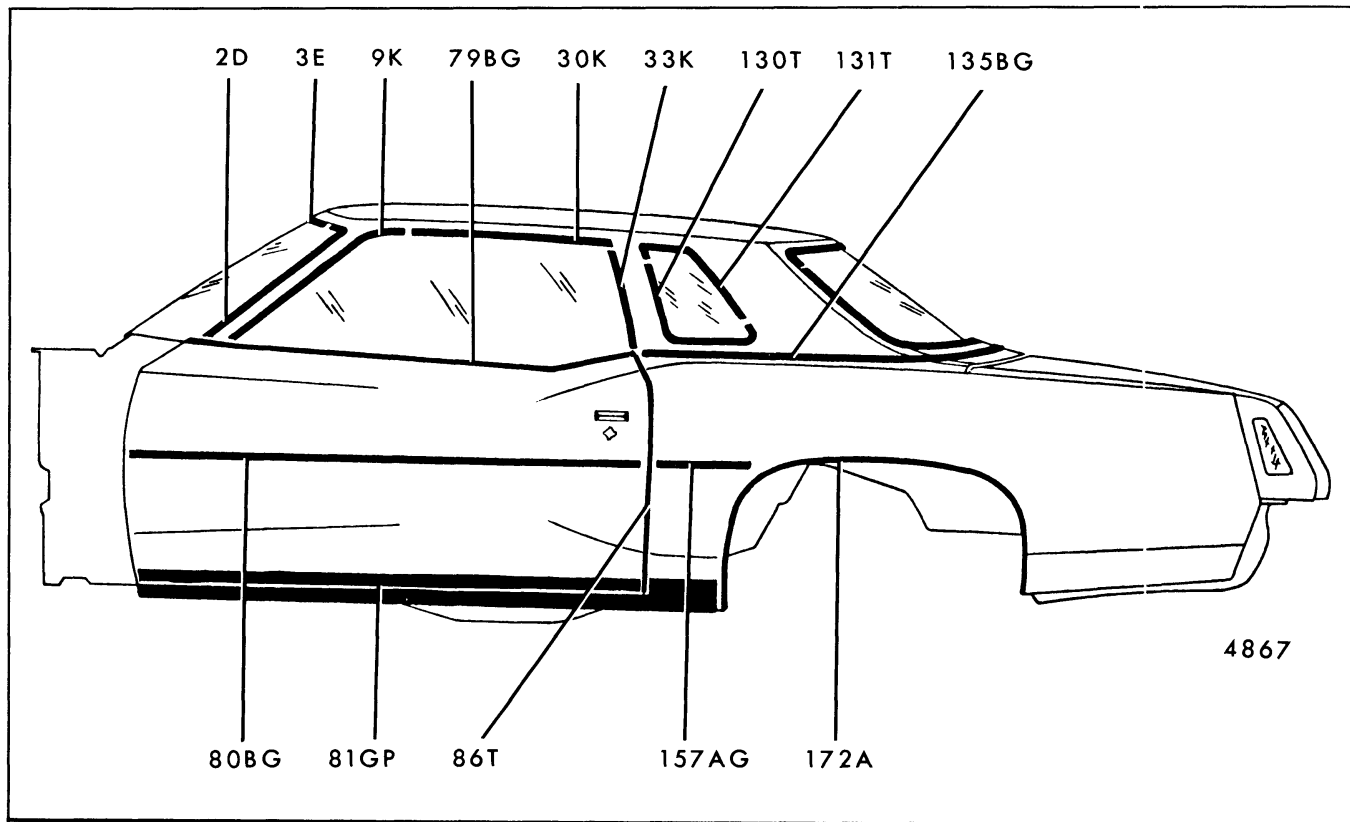


Fig. 11-37-Pontiac 2GK57 Styles

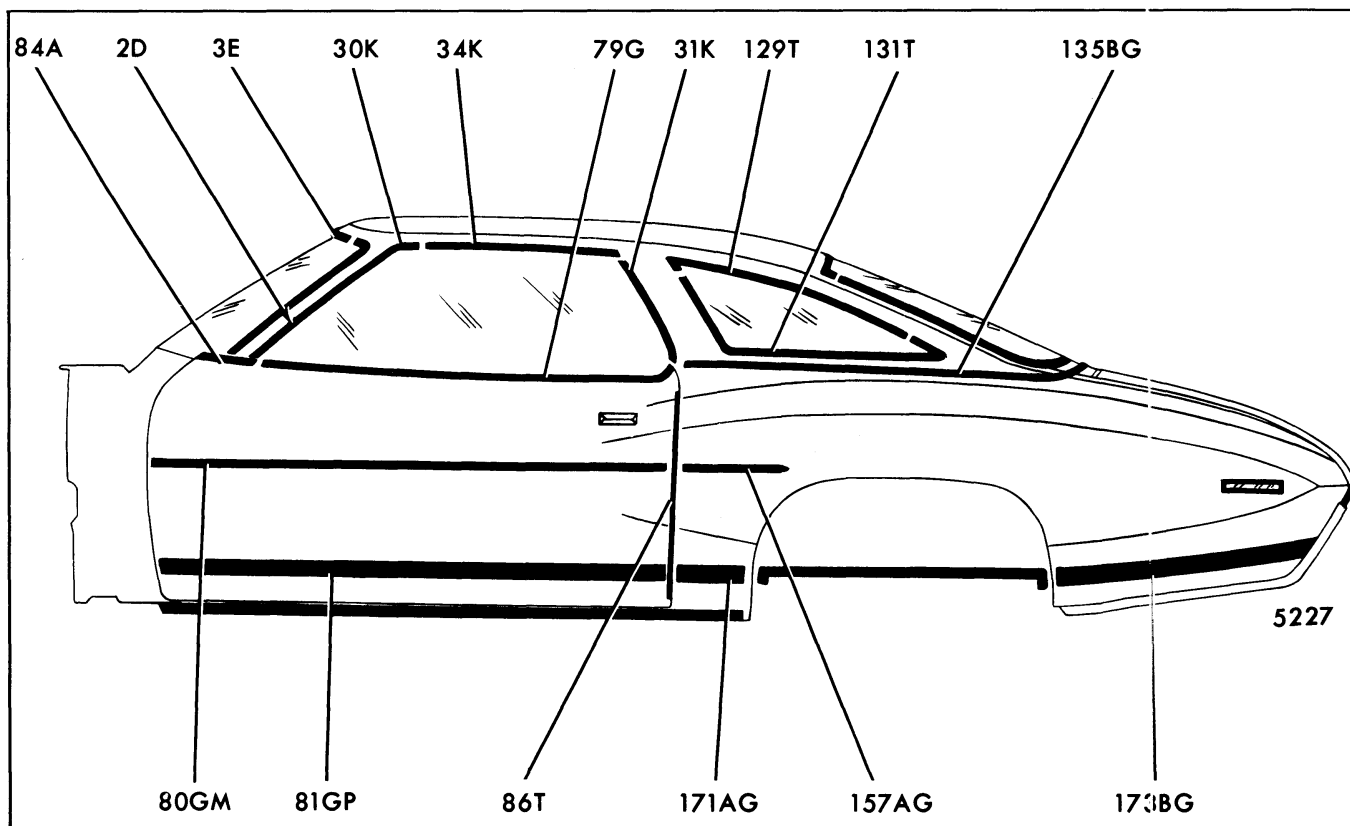


Fig. 11-38-Pontiac 2AD35 Styles

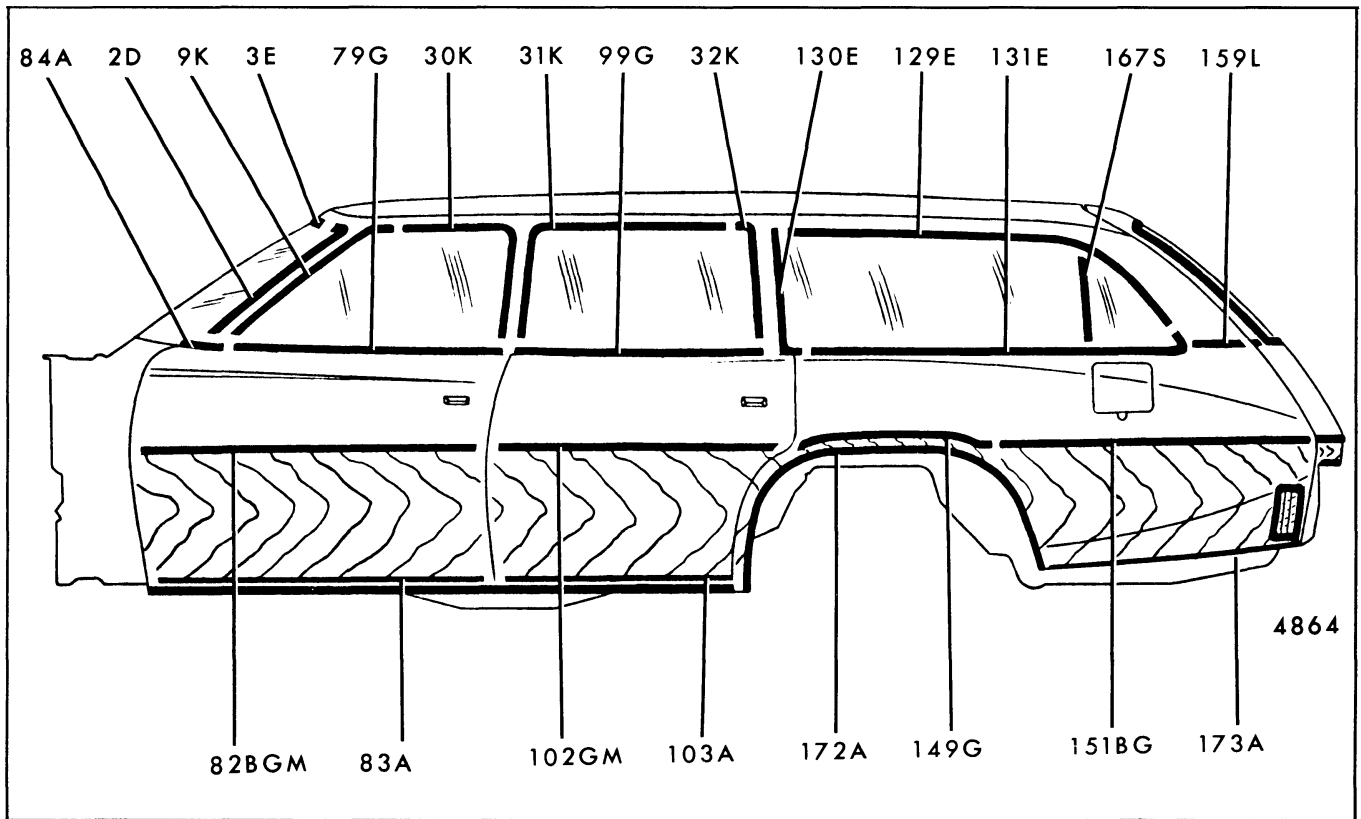


Fig. 11-39-Pontiac 2AD35 Styles

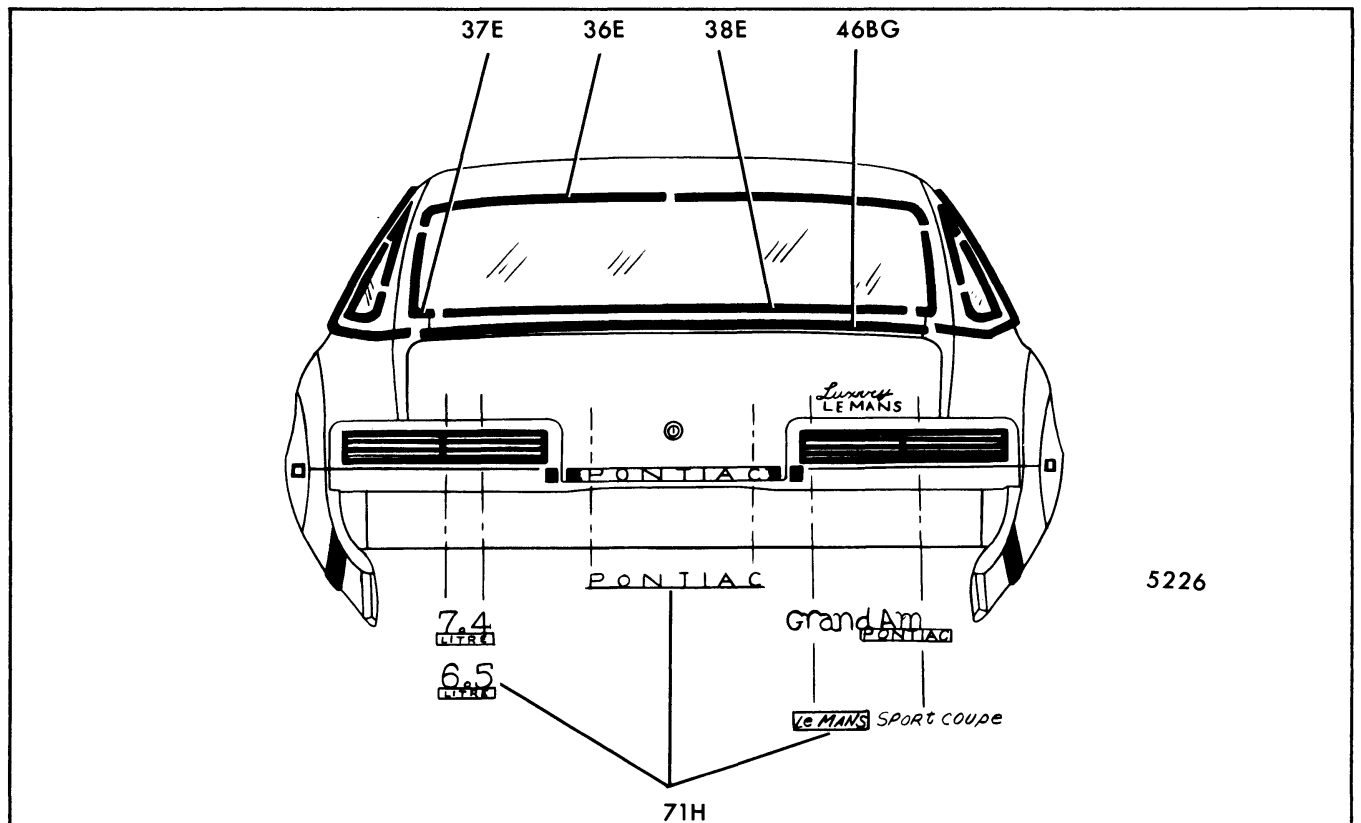


Fig. 11-40-Pontiac 2AH29 Styles (2AG, 2AD29, 2AH, 2AG, 2AF, 2AD37 Similar)

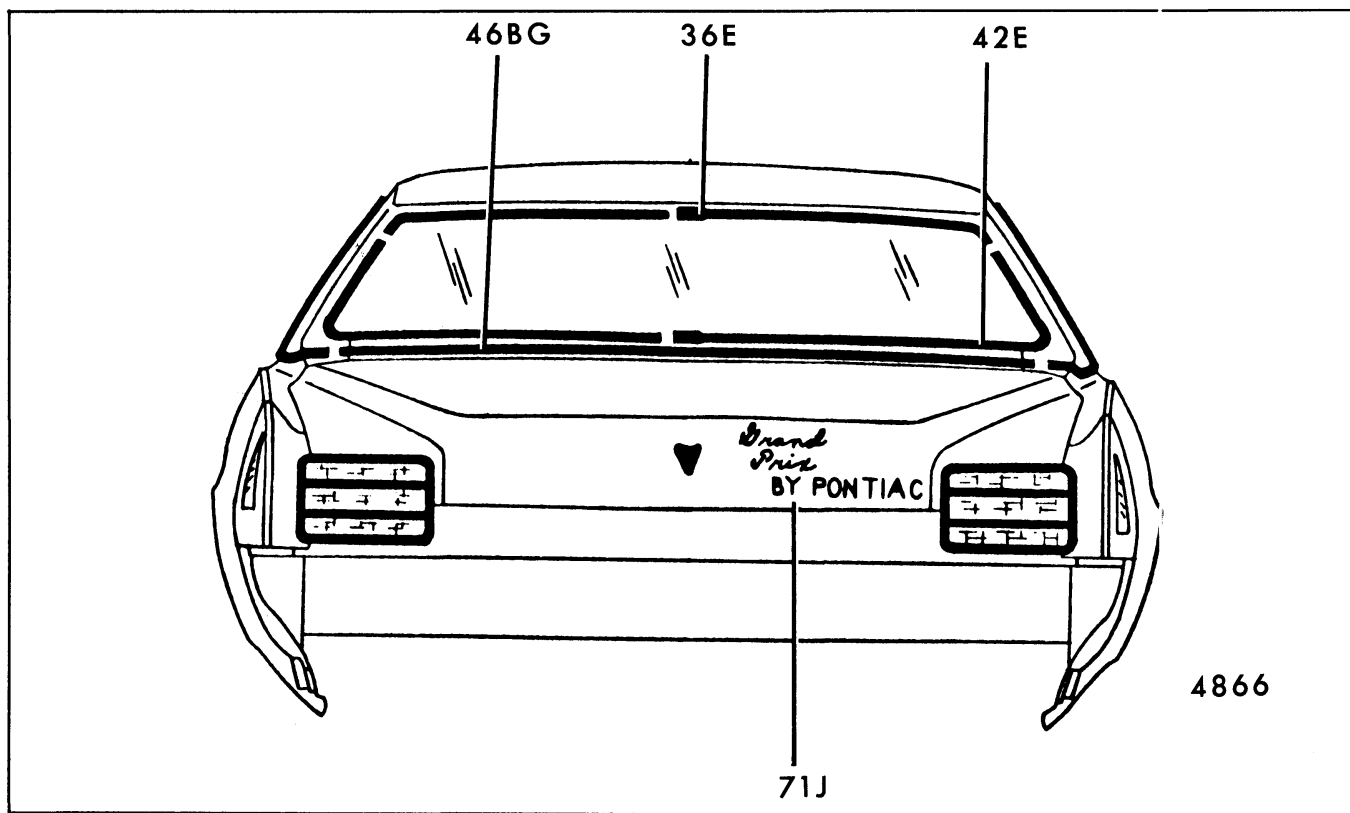


Fig. 11-41-Pontiac 2GK57 Styles

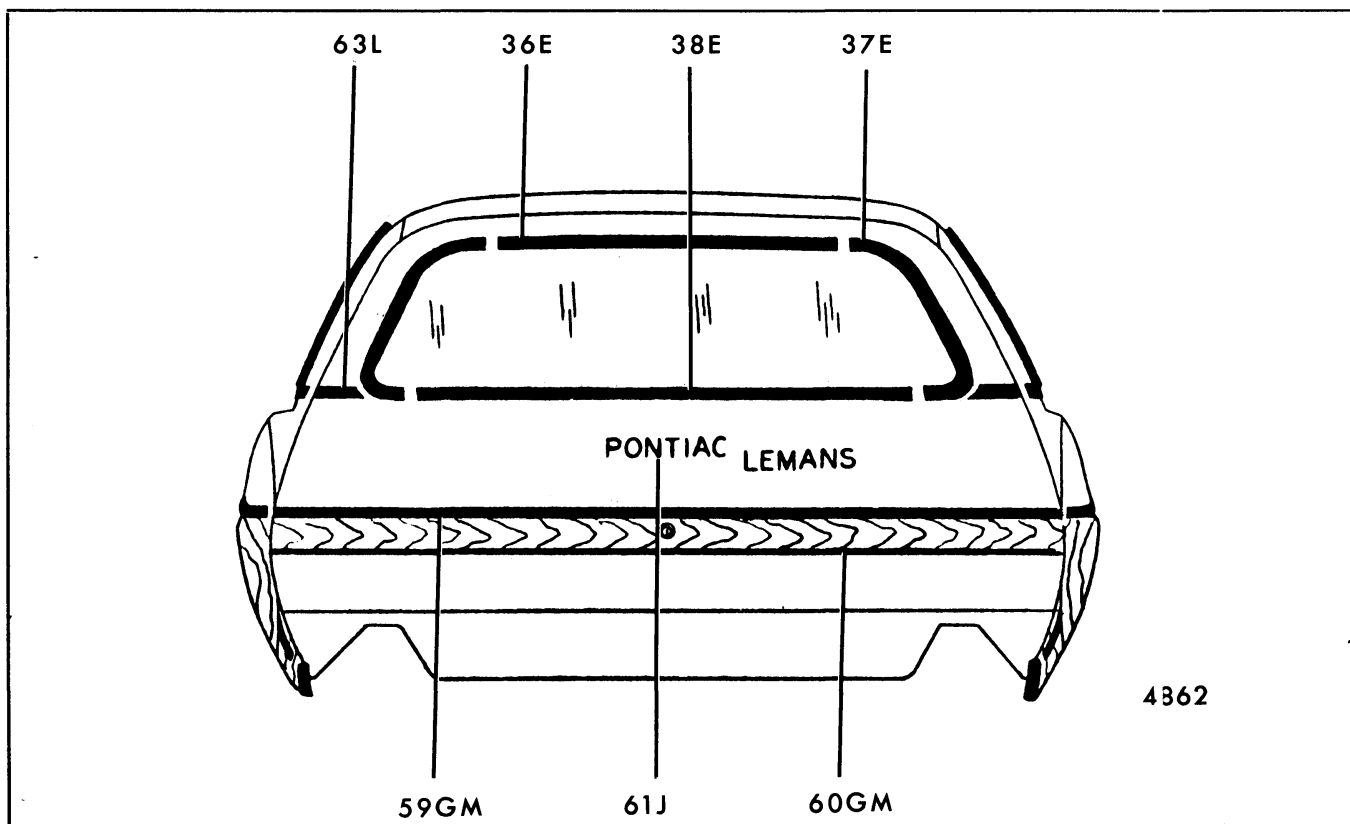


Fig. 11-42-Pontiac 2AD35 Styles

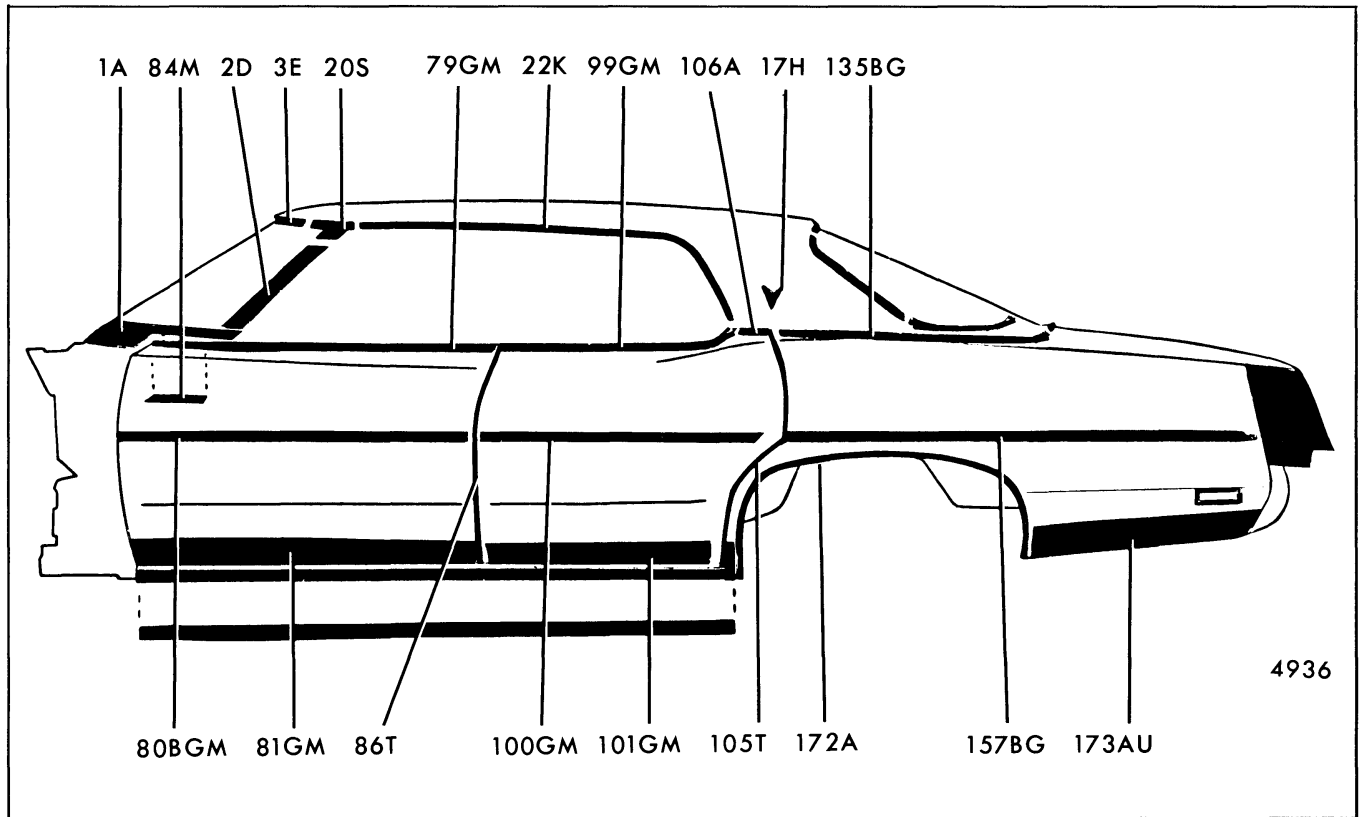


Fig. 11-43-Pontiac 2BN39 Styles (2BL39 and Canadian Style 7BL39 Similar)

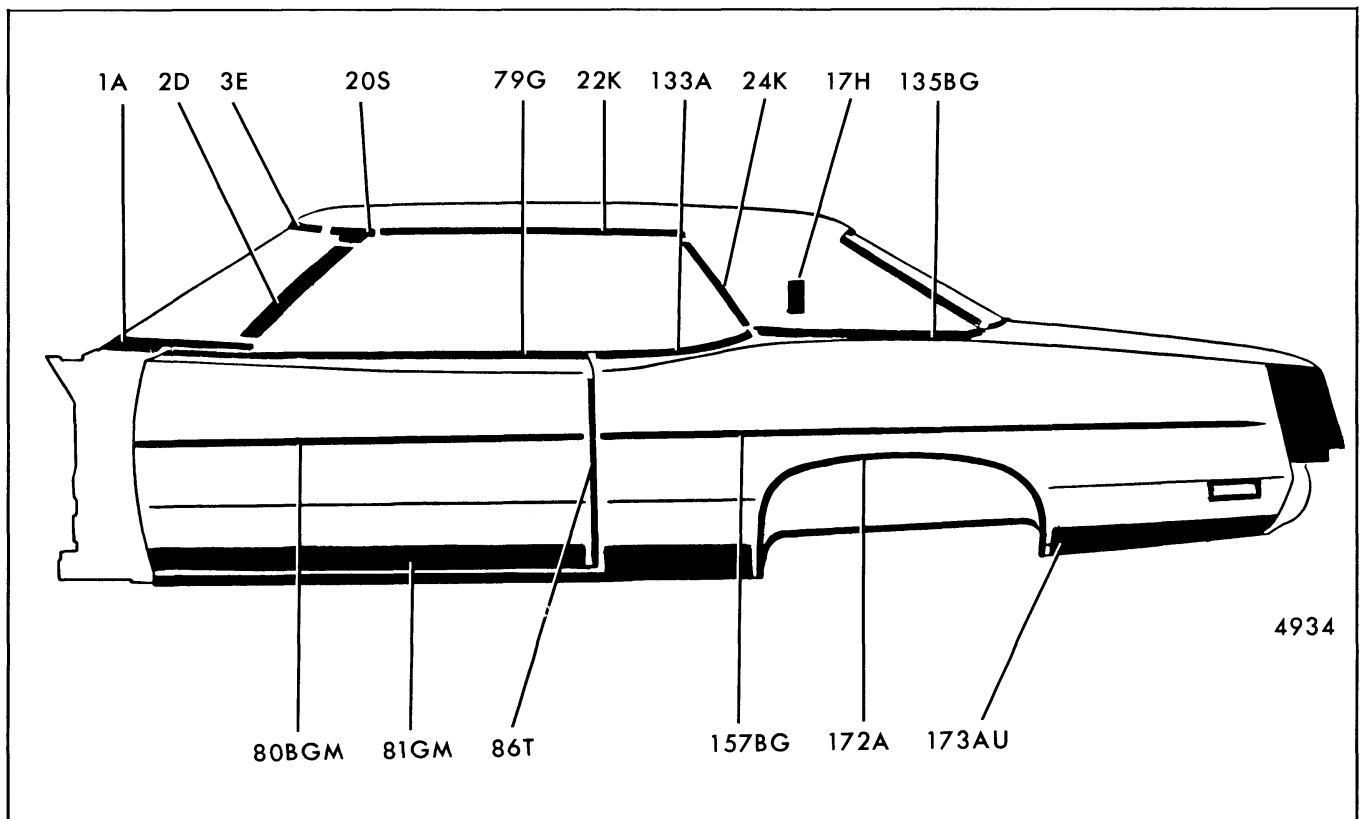


Fig. 11-44-Pontiac 2BP47 Styles

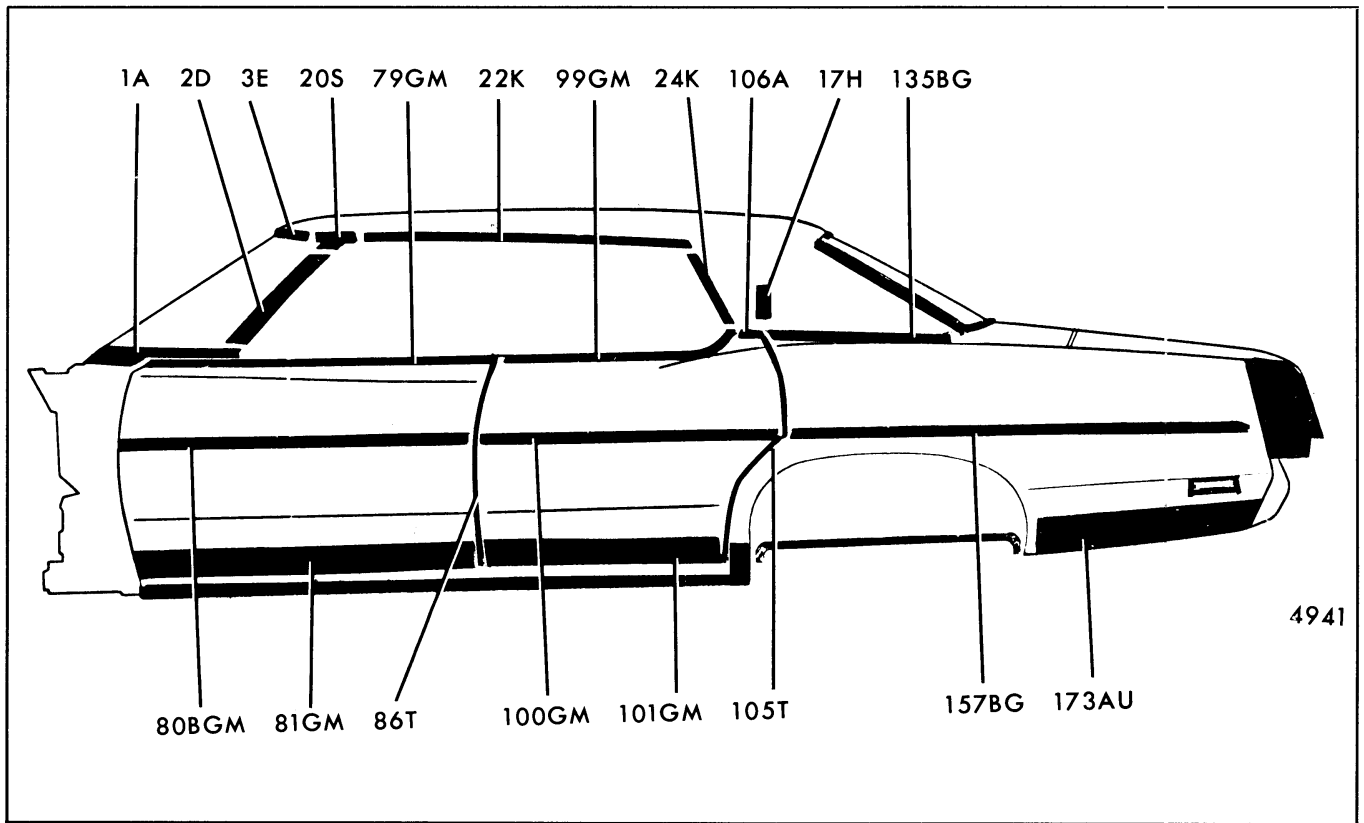


Fig. 11-45-Pontiac 2BP49 Styles

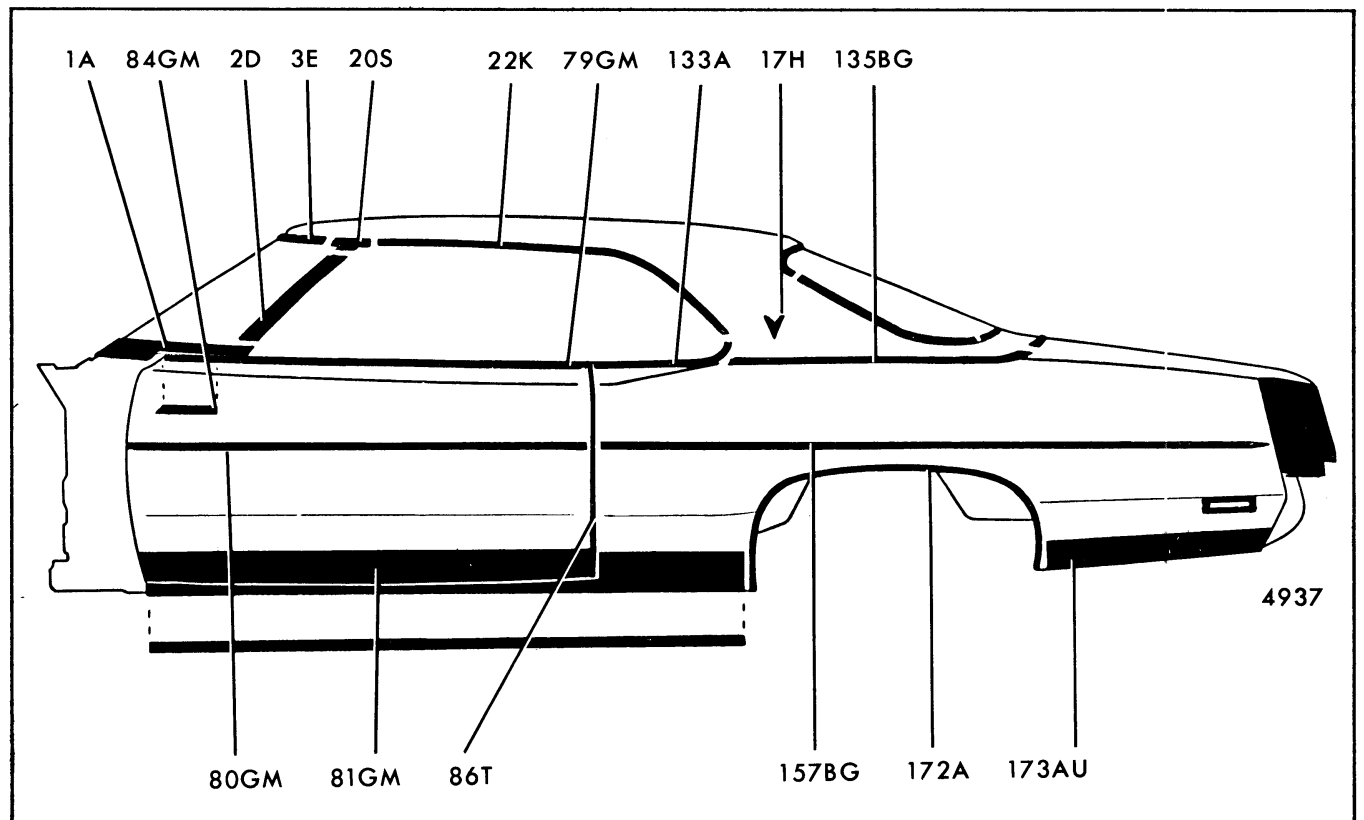


Fig. 11-46-Pontiac 2BN57 Styles (2BL57, 2BP67 and Canadian Styles 7BL, 7BK57 Similar)

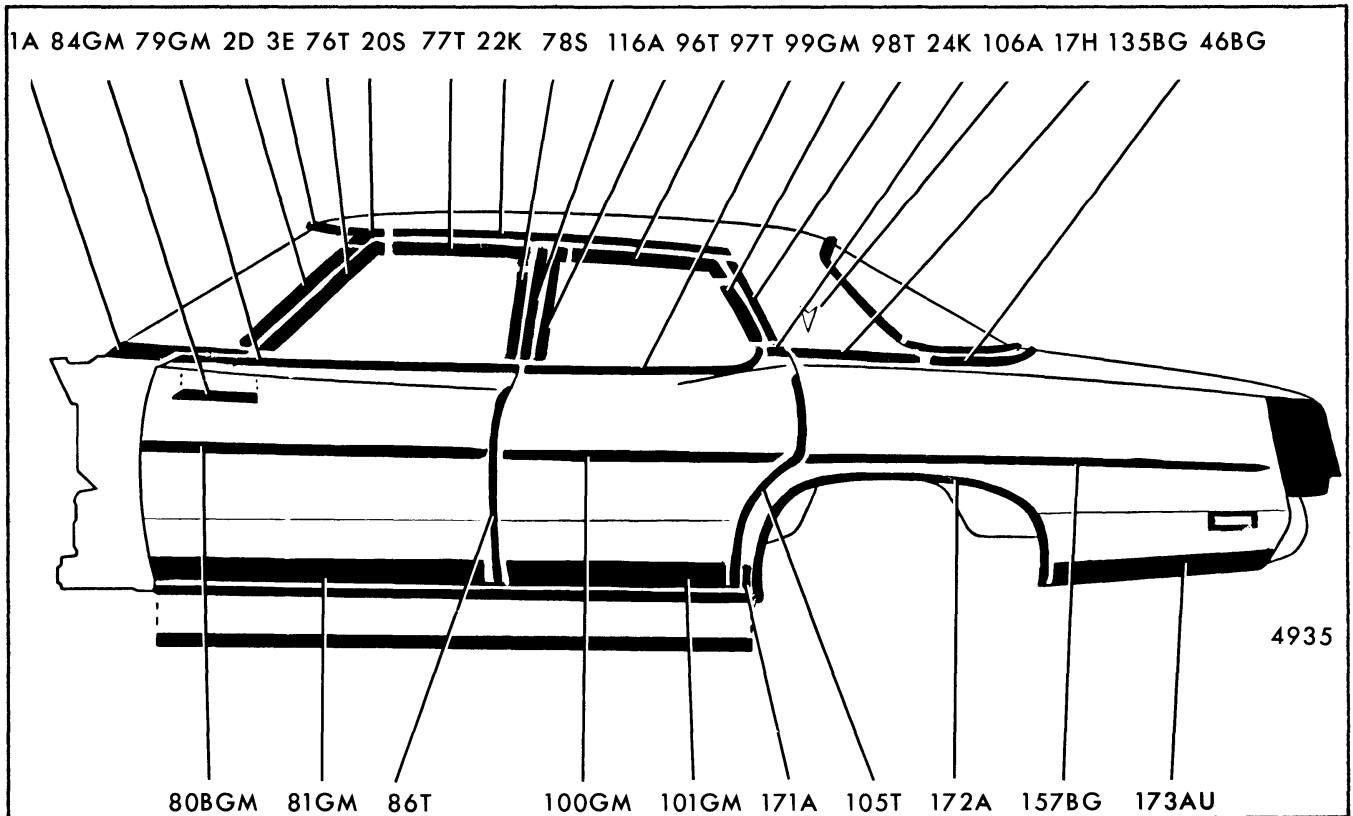


Fig. 11-47-Pontiac 2BN69 Styles (2BL69 and Canadian Styles 7BL, 7BK69 Similar)

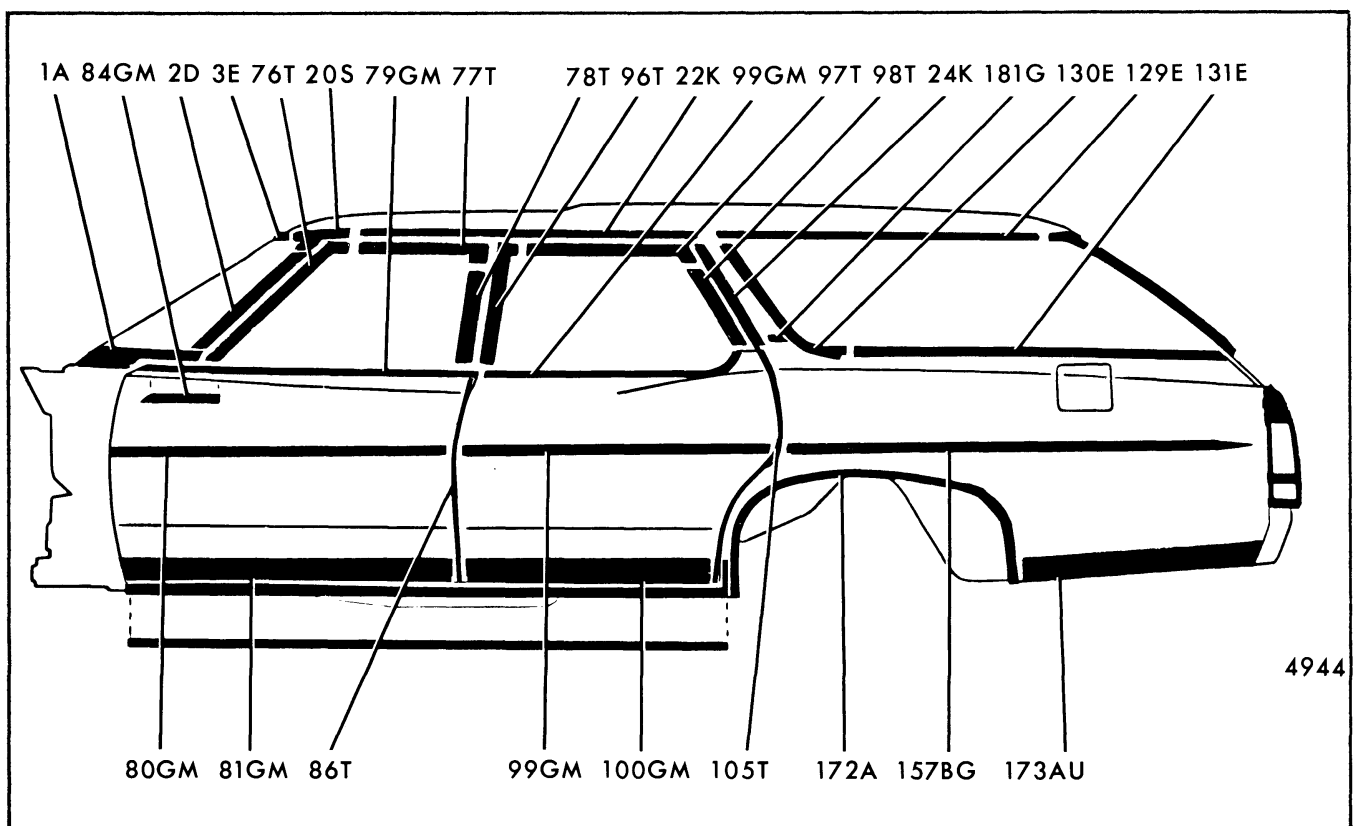


Fig. 11-48-Pontiac 2BP45 Styles (2BP, 2BL35-45 and Canadian Styles 7BK35-45 Similar)

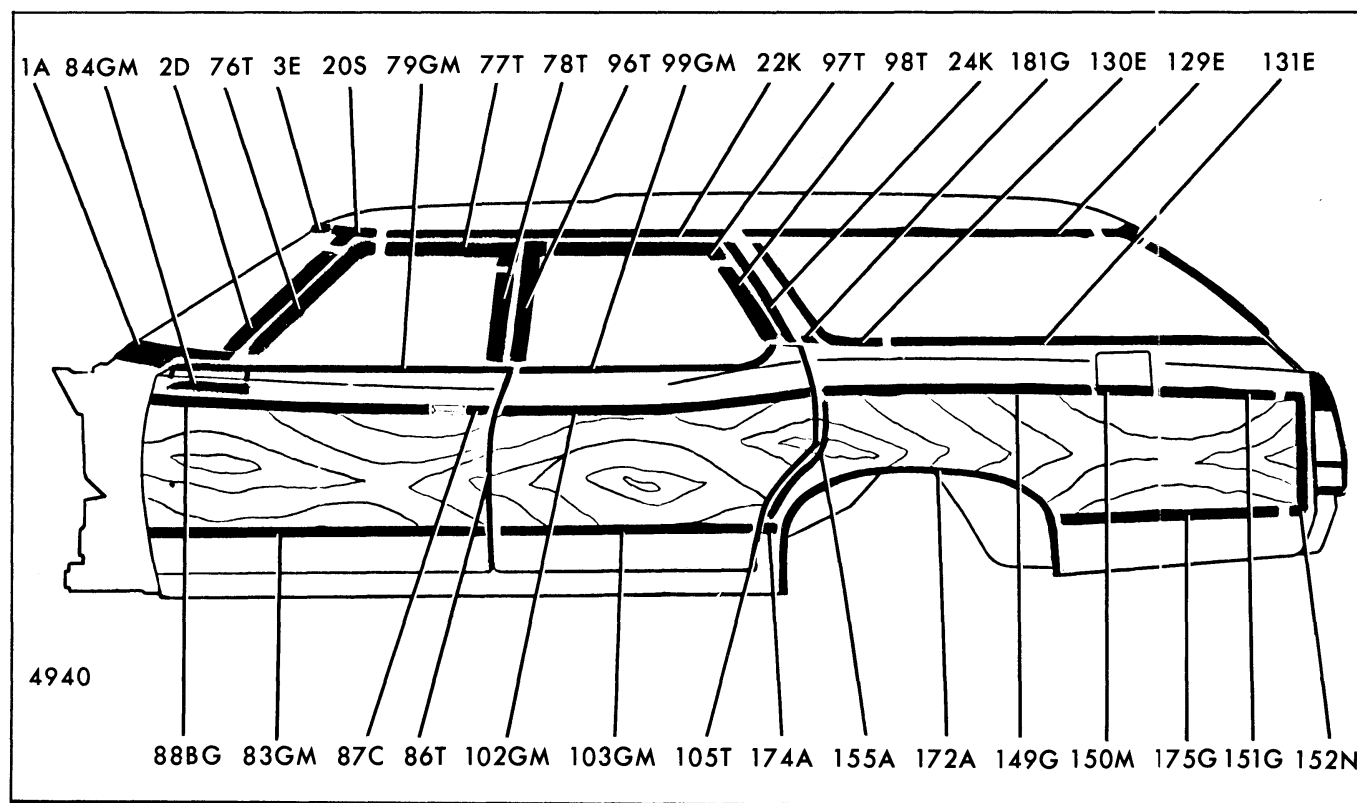


Fig. 11-49-Pontiac 2BP45 STYLES (2BP35, 2BL35-45 Similar)

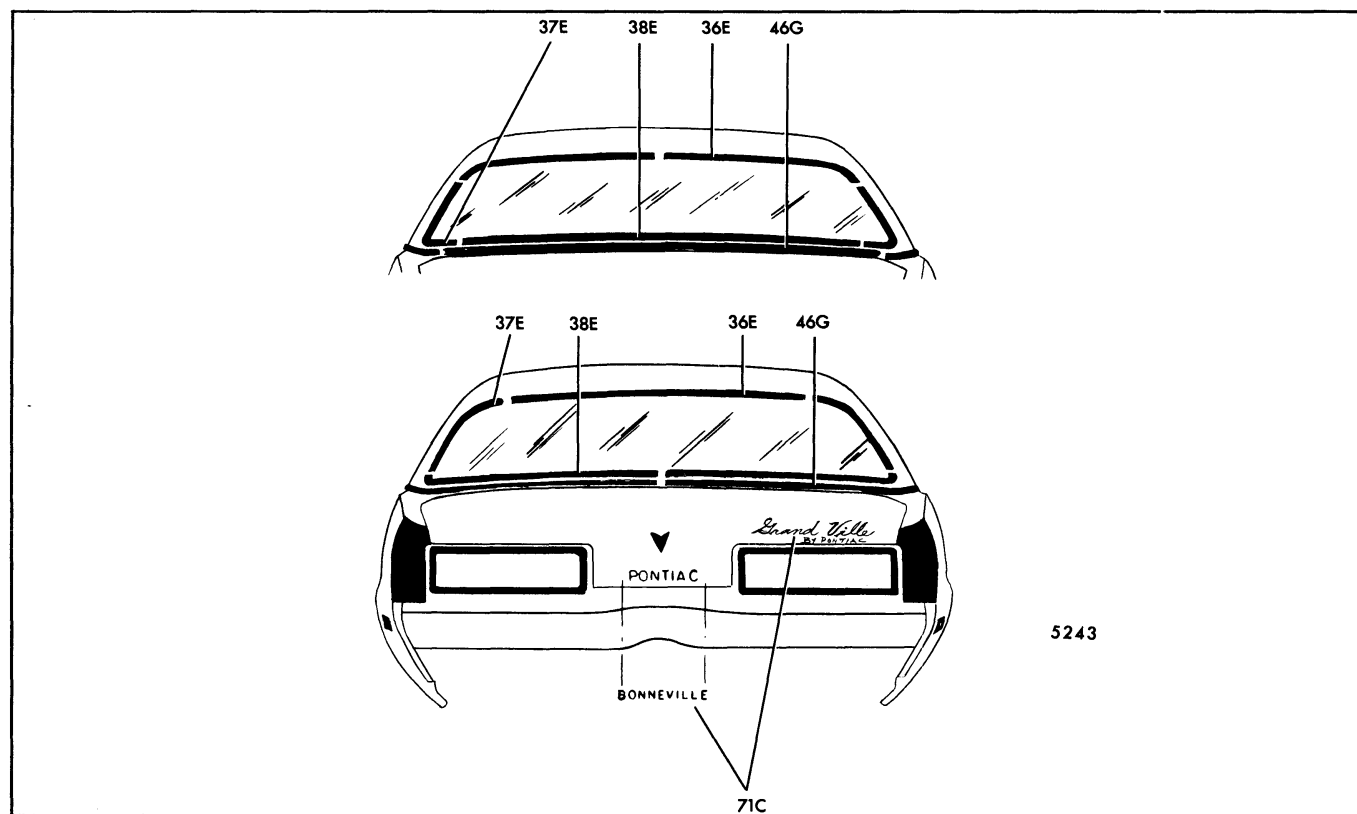


Fig. 11-50-Pontiac 2BL, 2BN, 2BP Styles (All Except Station Wagons)



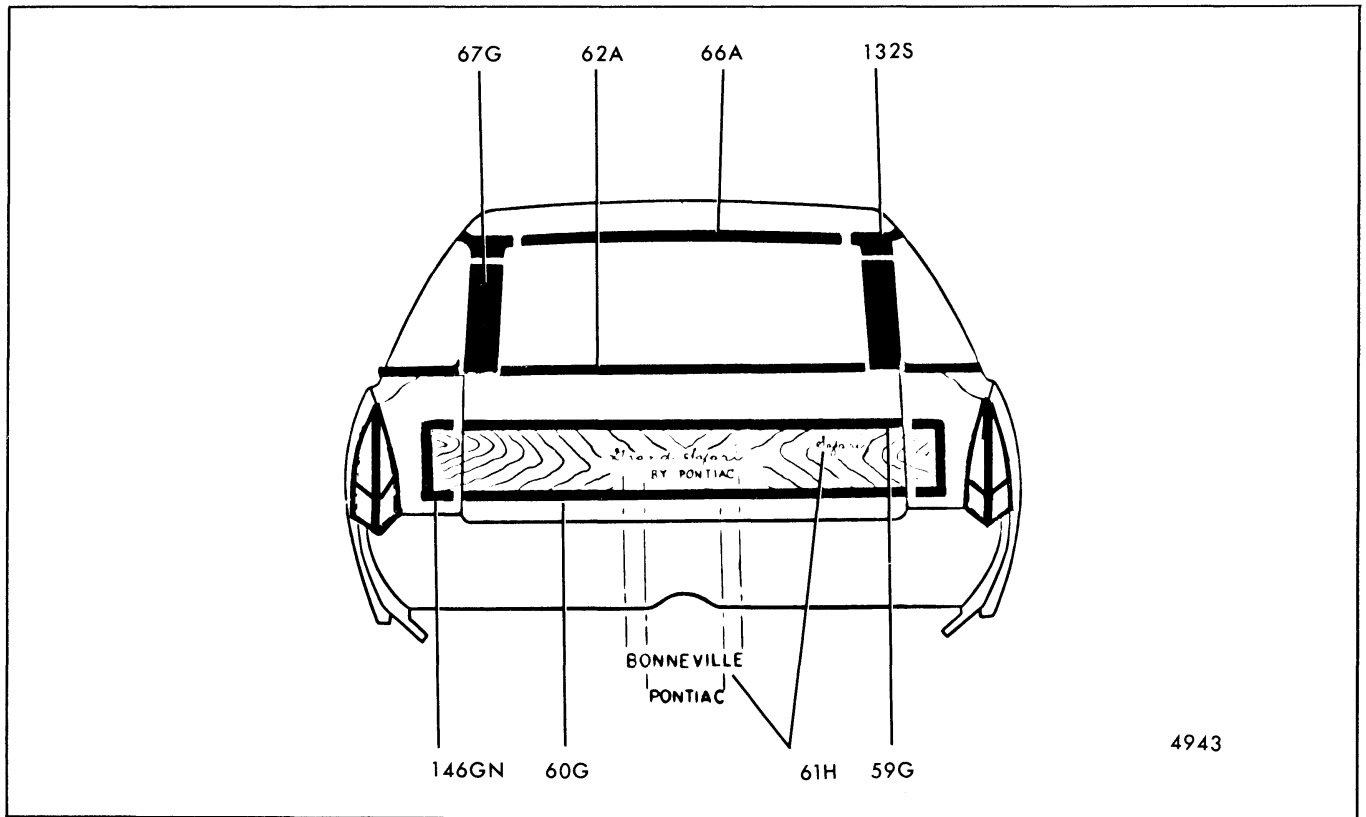


Fig. 11-51-Pontiac 2BL, 2BP Styles (All Station Wagons Similar, Including Canadian 7BK35-45 Styles)

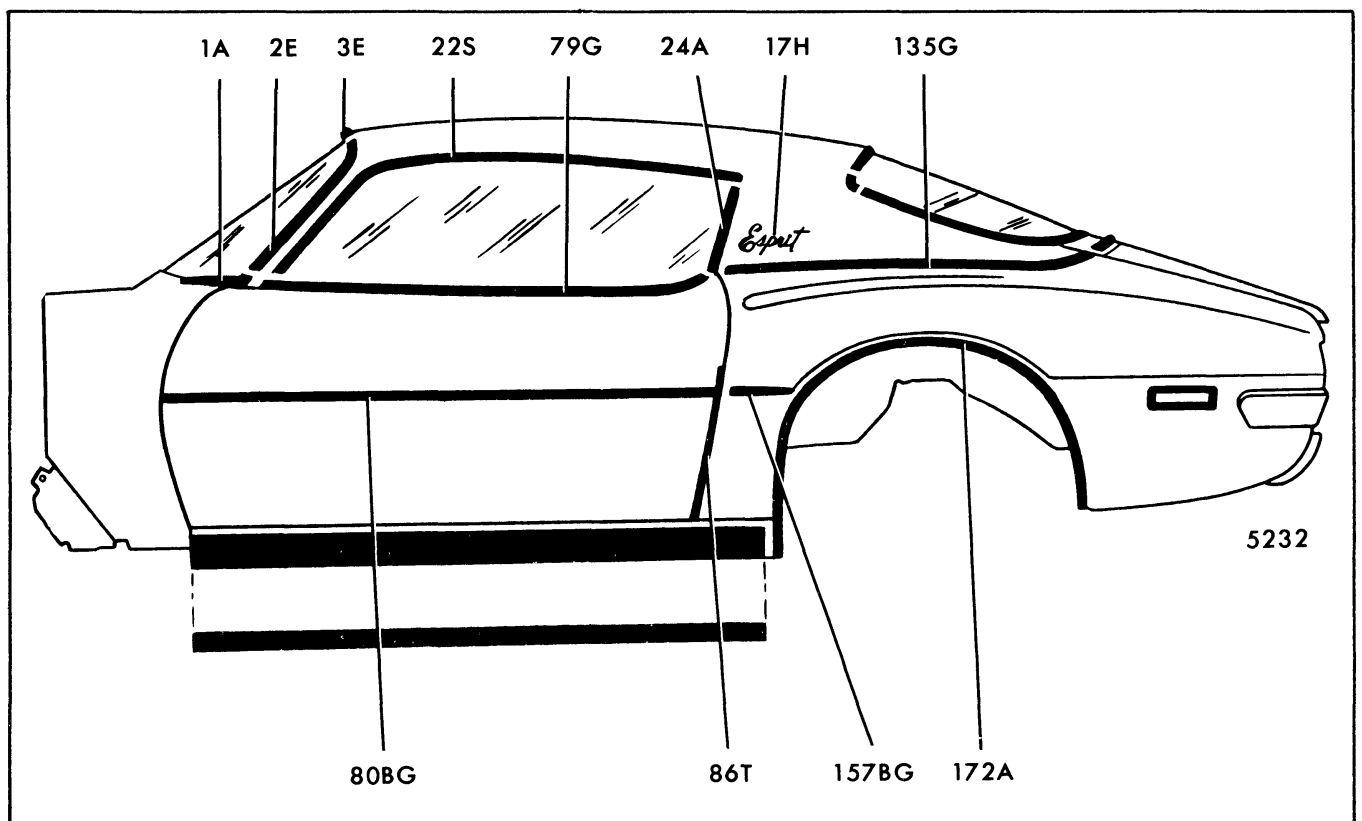


Fig. 11-52-Pontiac 2FS87 Styles

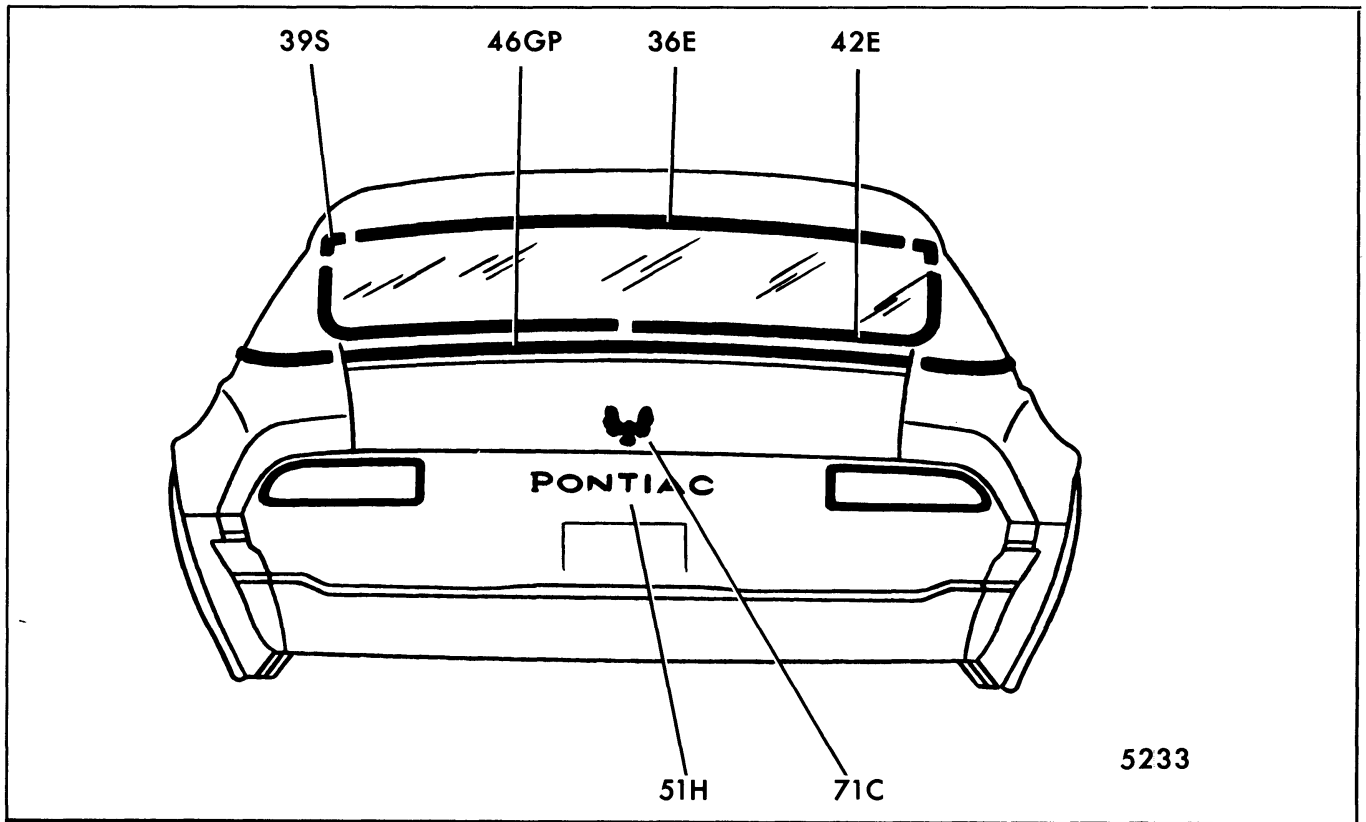


Fig. 11-53-Pontiac 2FS87 Styles

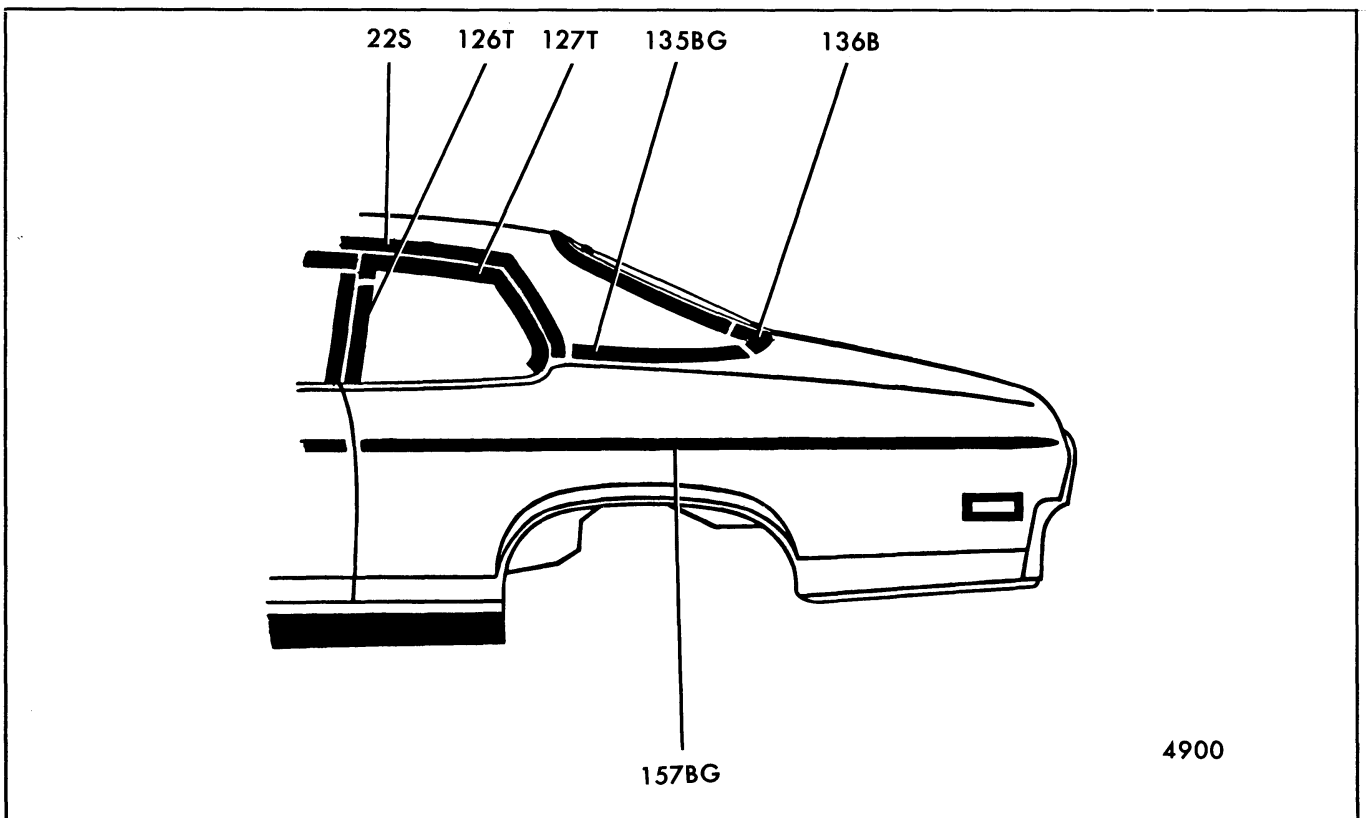


Fig. 11-54-Pontiac 2XY17 Styles

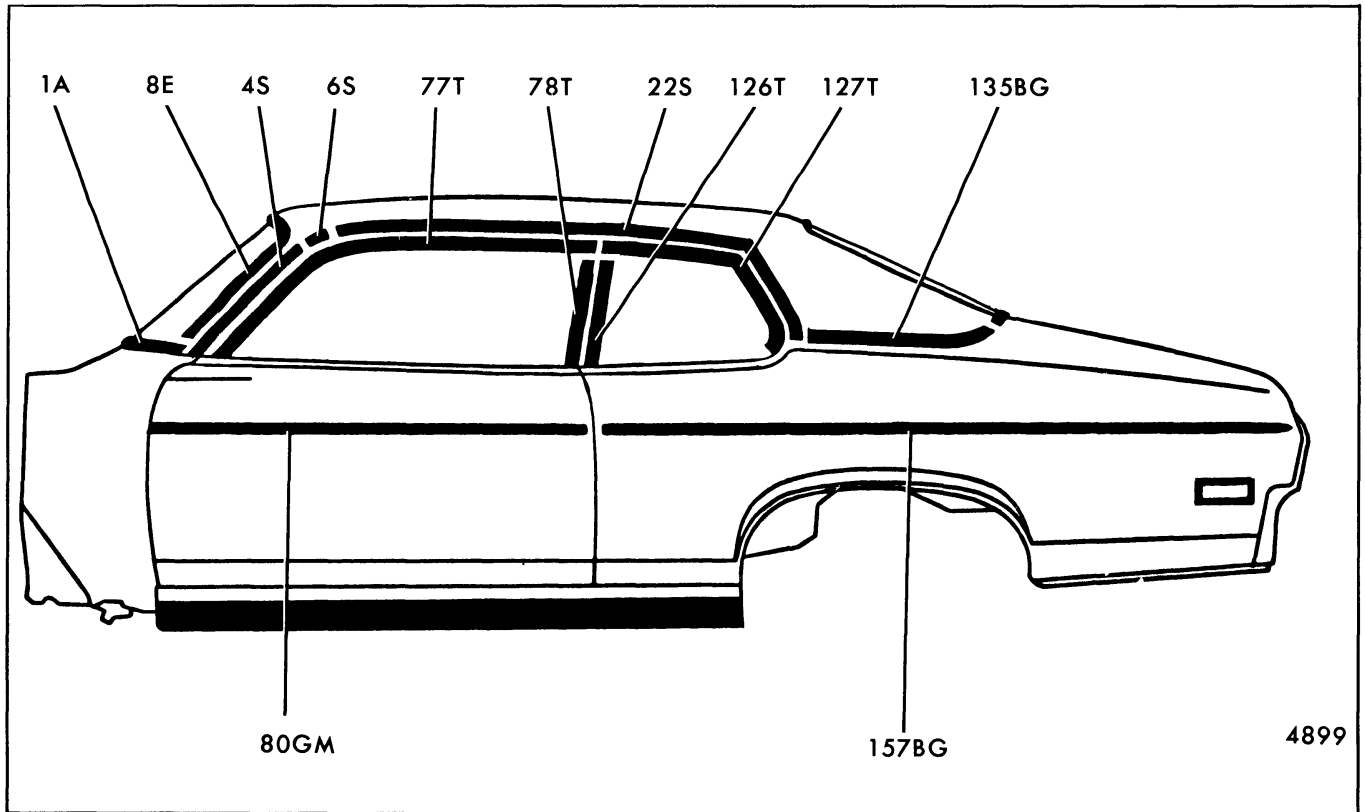


Fig. 11-55-Pontiac 2XY27 Styles

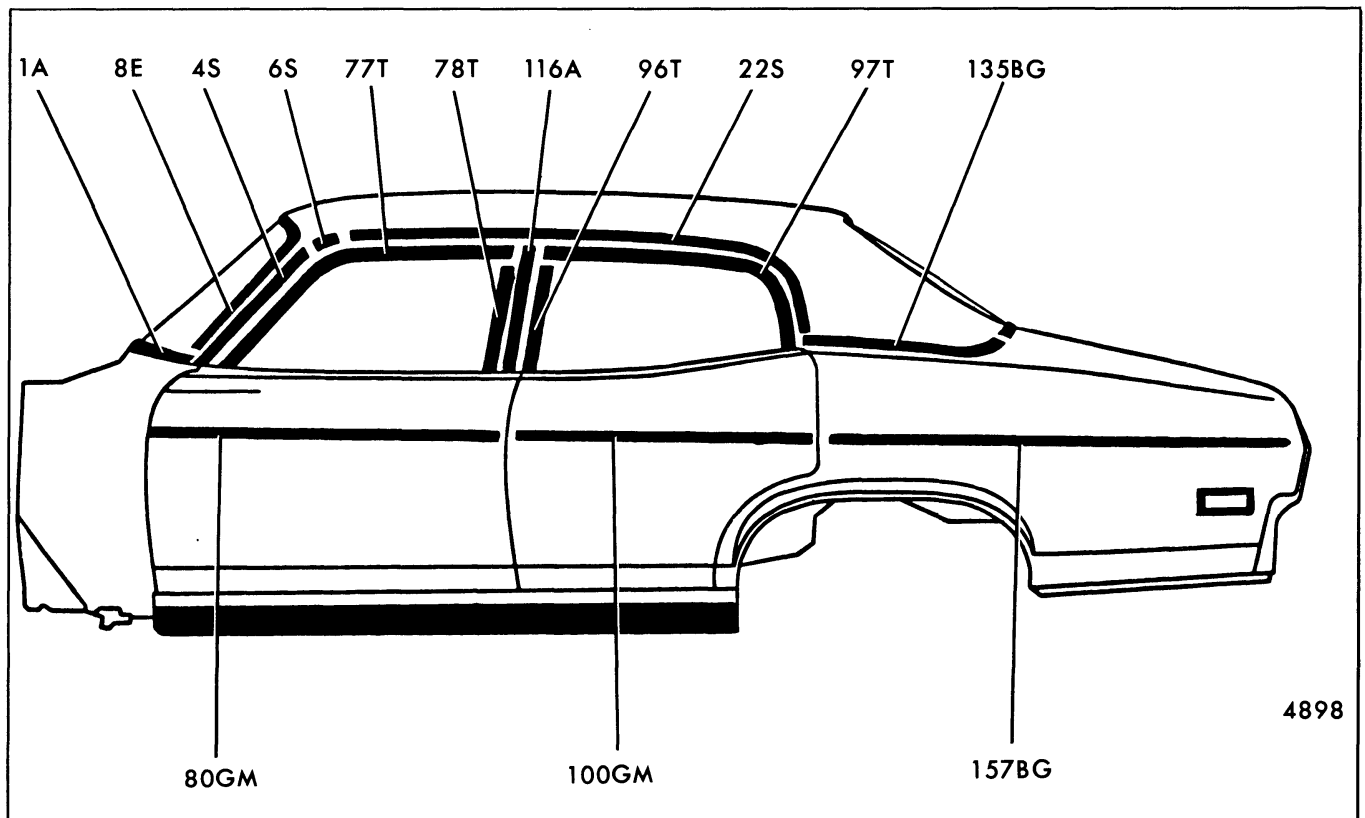


Fig. 11-56-Pontiac 2XY69 Styles

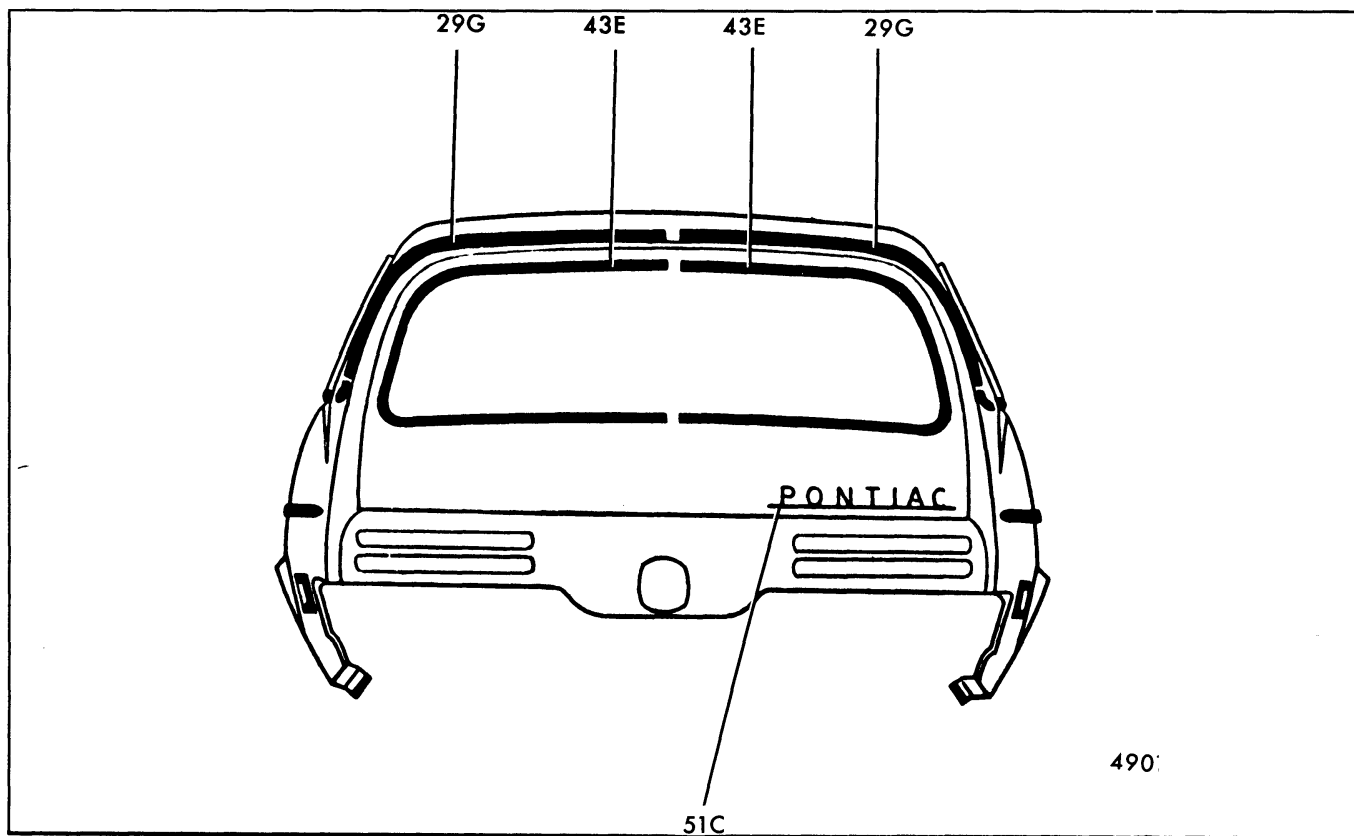


Fig. 11-57-Pontiac 2XY17 Styles

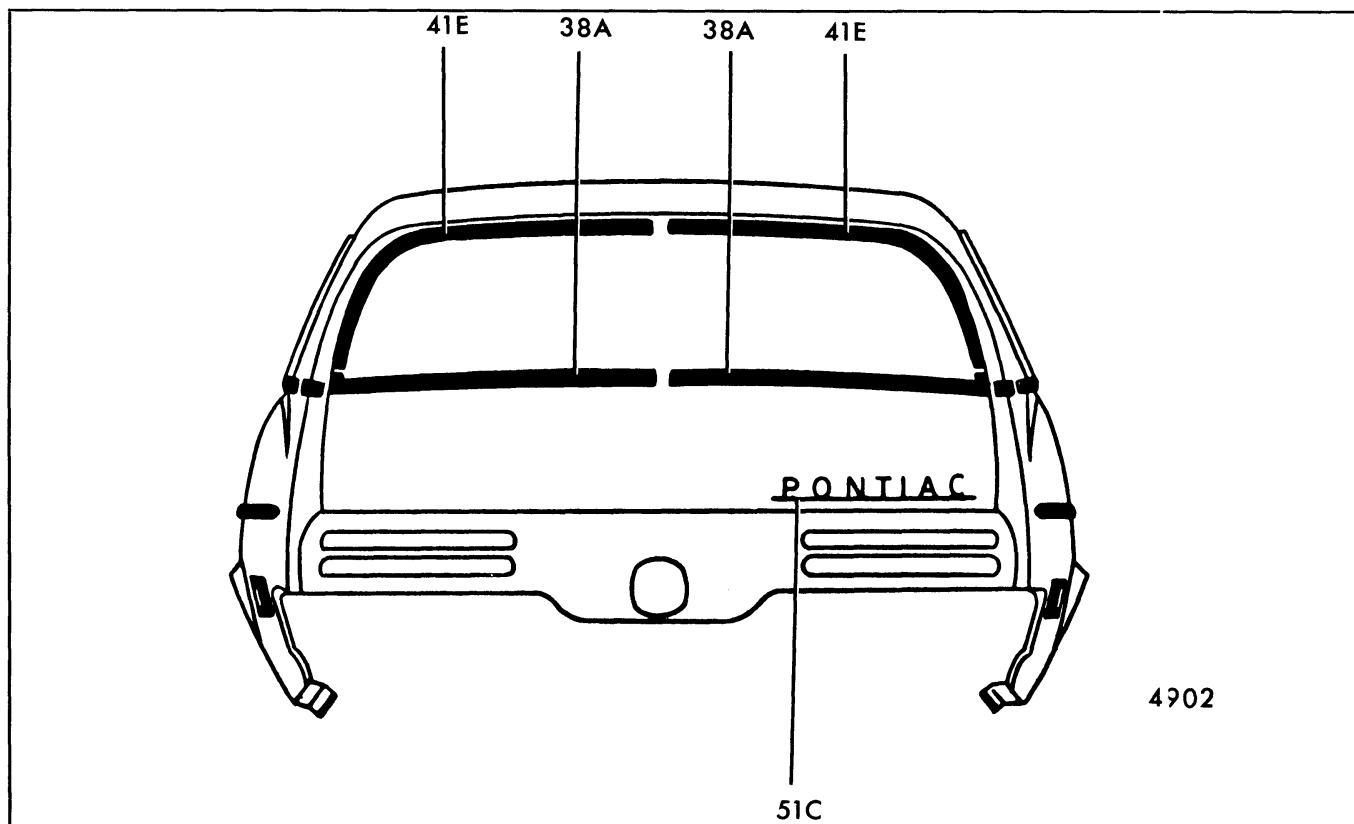


Fig. 11-58-Pontiac 2XY27 Styles (2XY69 Similar)

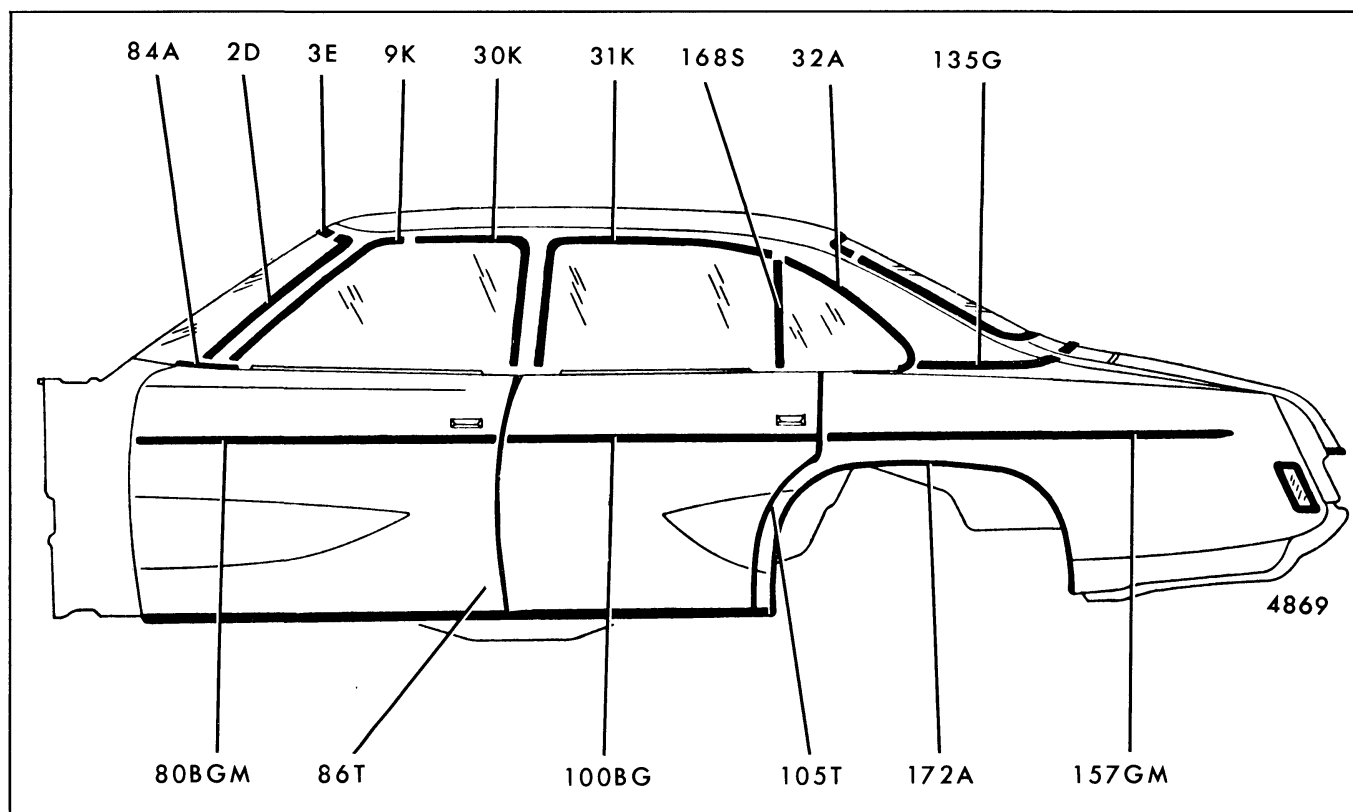


Fig. 11-59-Oldsmobile 3AJ29 Styles (3AG29 Similar)

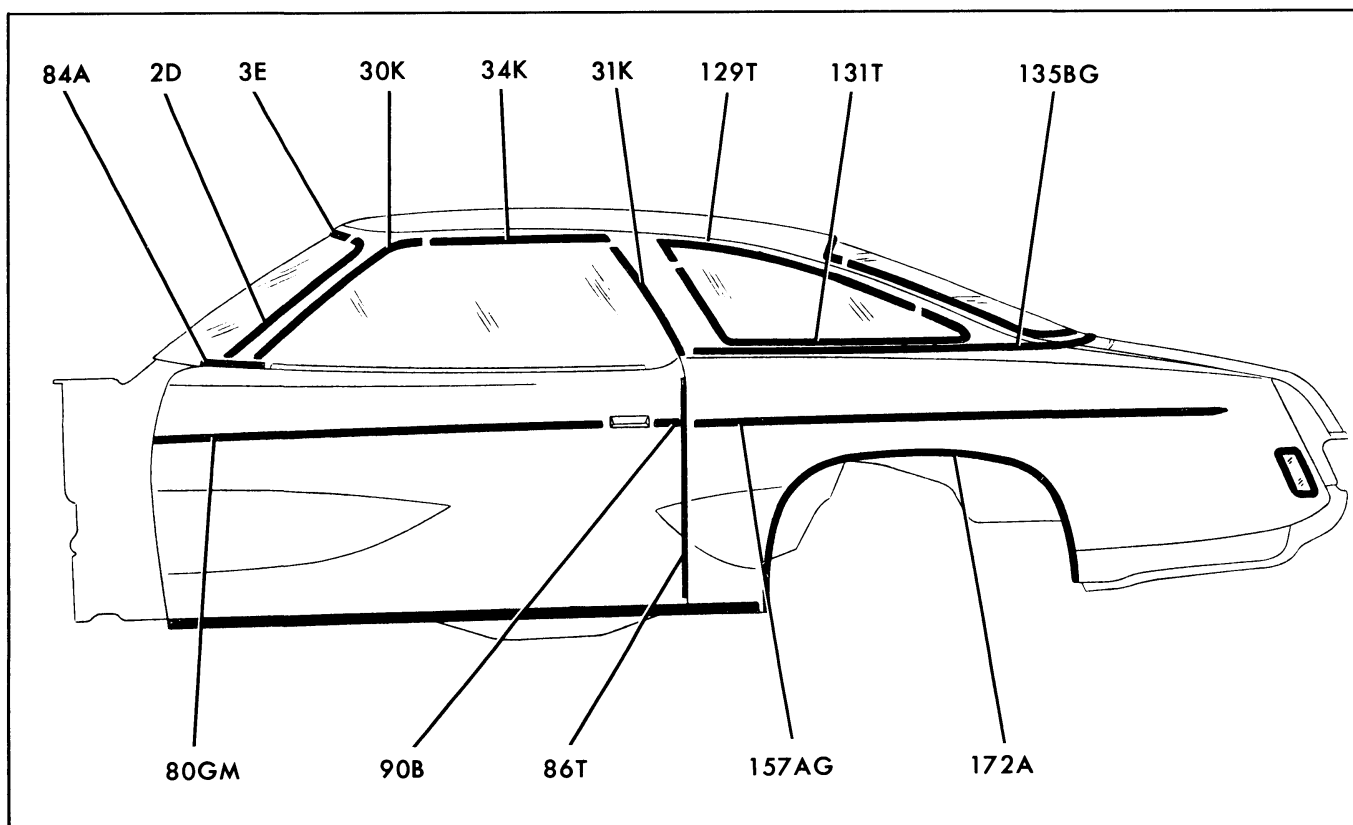


Fig. 11-60-Oldsmobile 3AG37 Styles (3AF37 Similar)

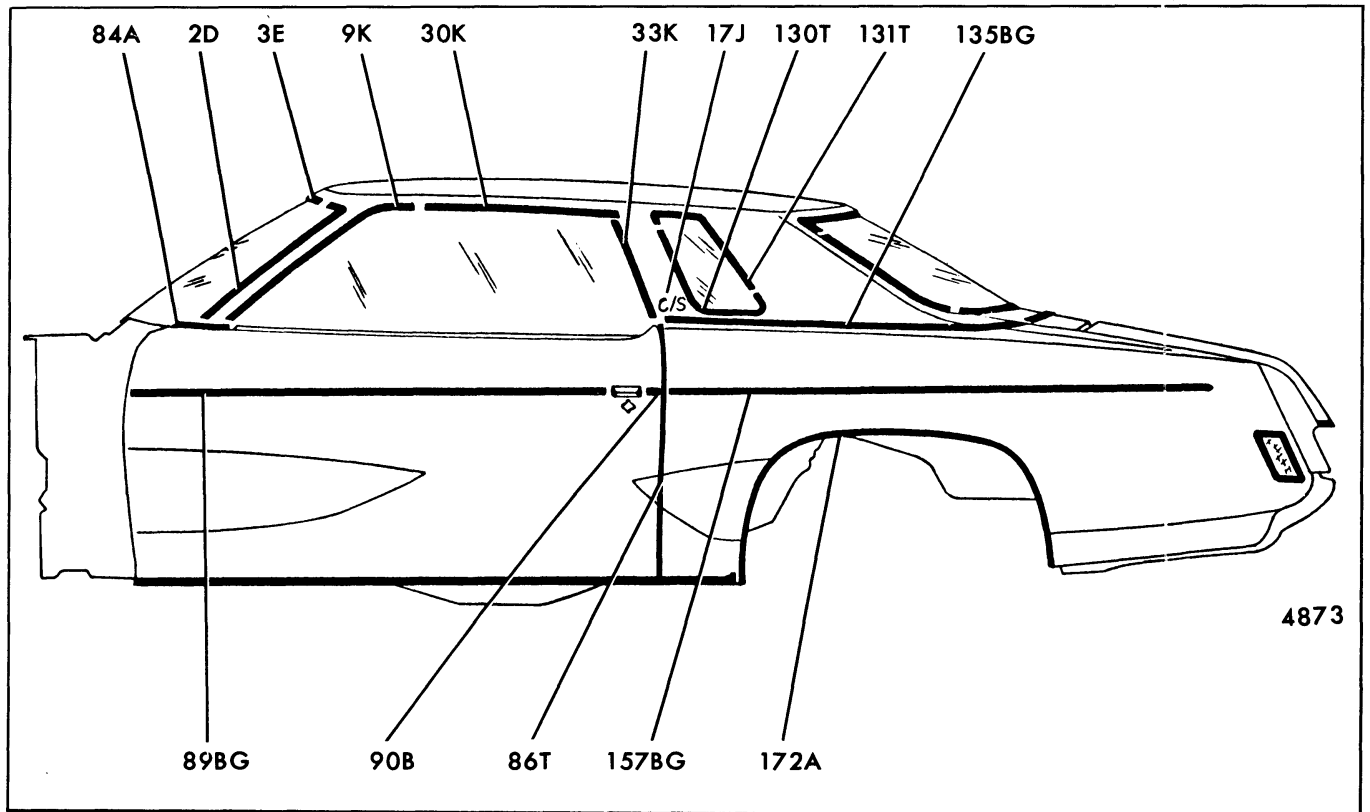


Fig. 11-61-Oldsmobile 3AJ57 Styles

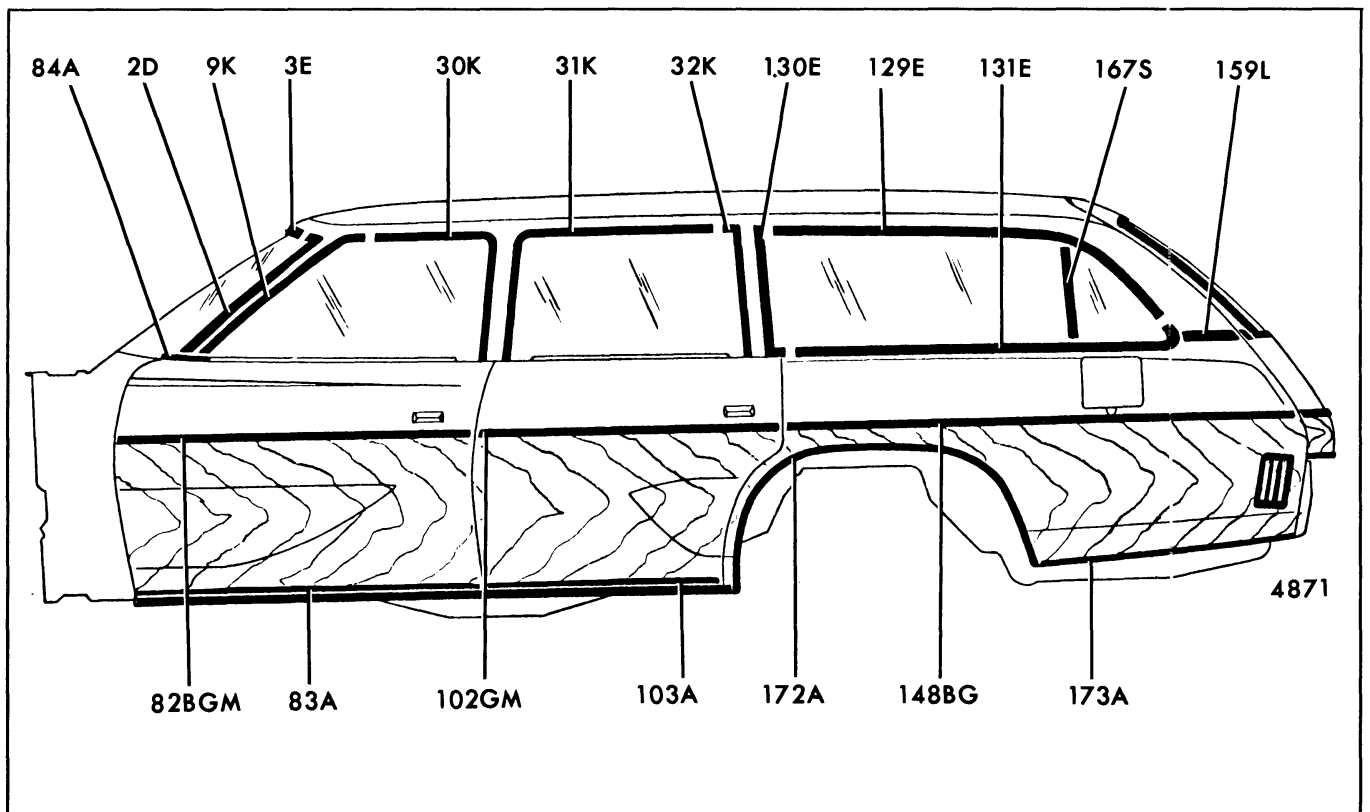


Fig. 11-62-Oldsmobile 3AJ35 Styles

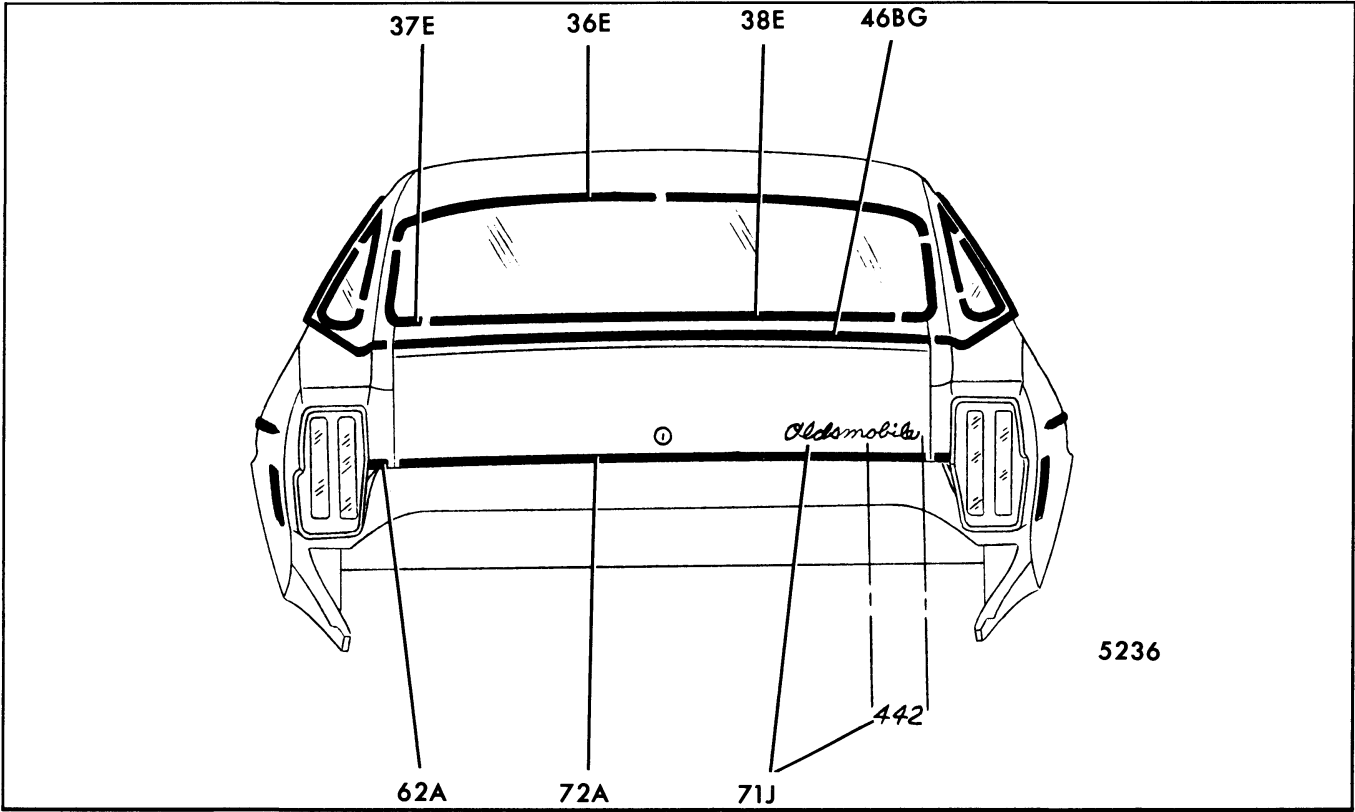


Fig. 11-63-Oldsmobile 3AJ29 Styles (3AG29, 3AG, 3AF37 Similar)

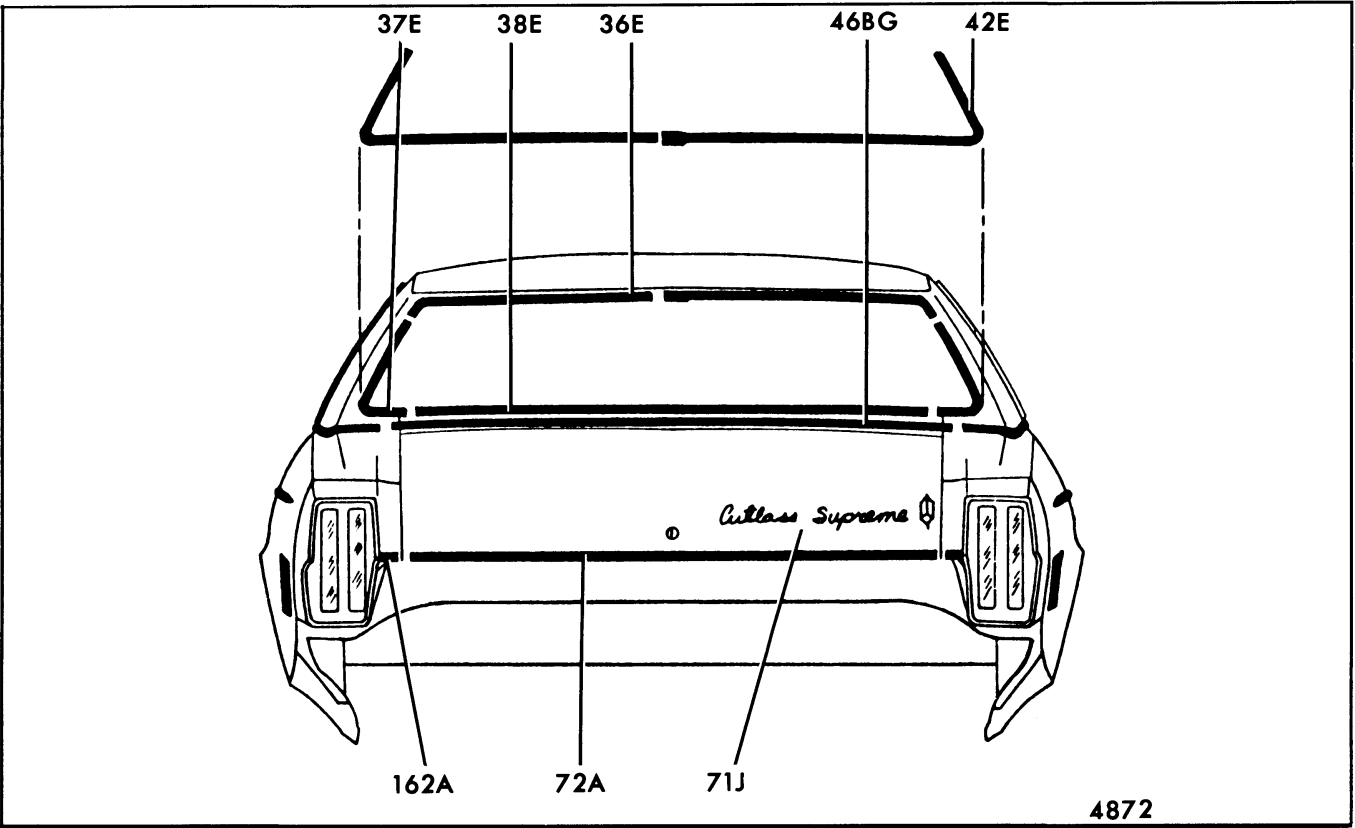


Fig. 11-64-Oldsmobile 3AJ57 Styles

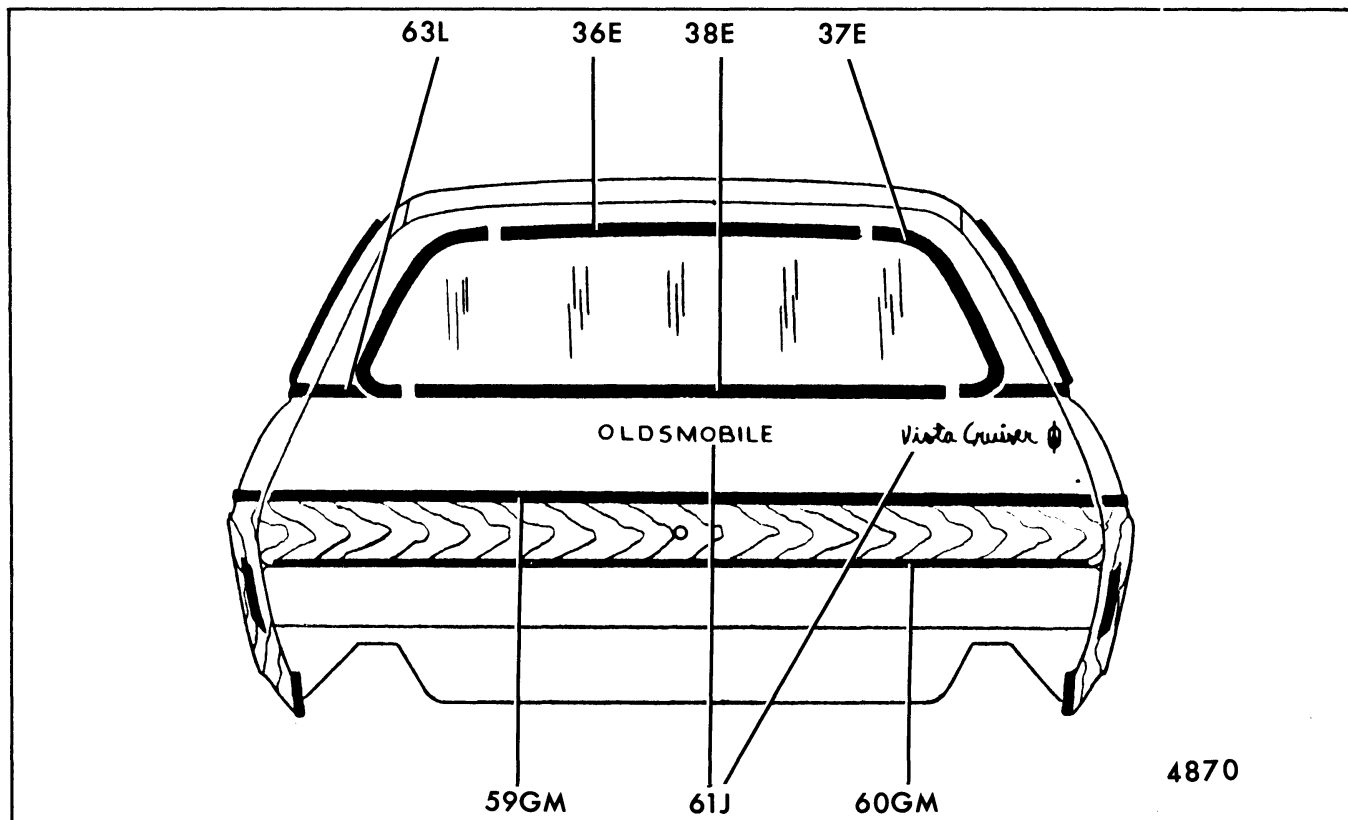


Fig. 11-65-Oldsmobile 3AJ35 Styles

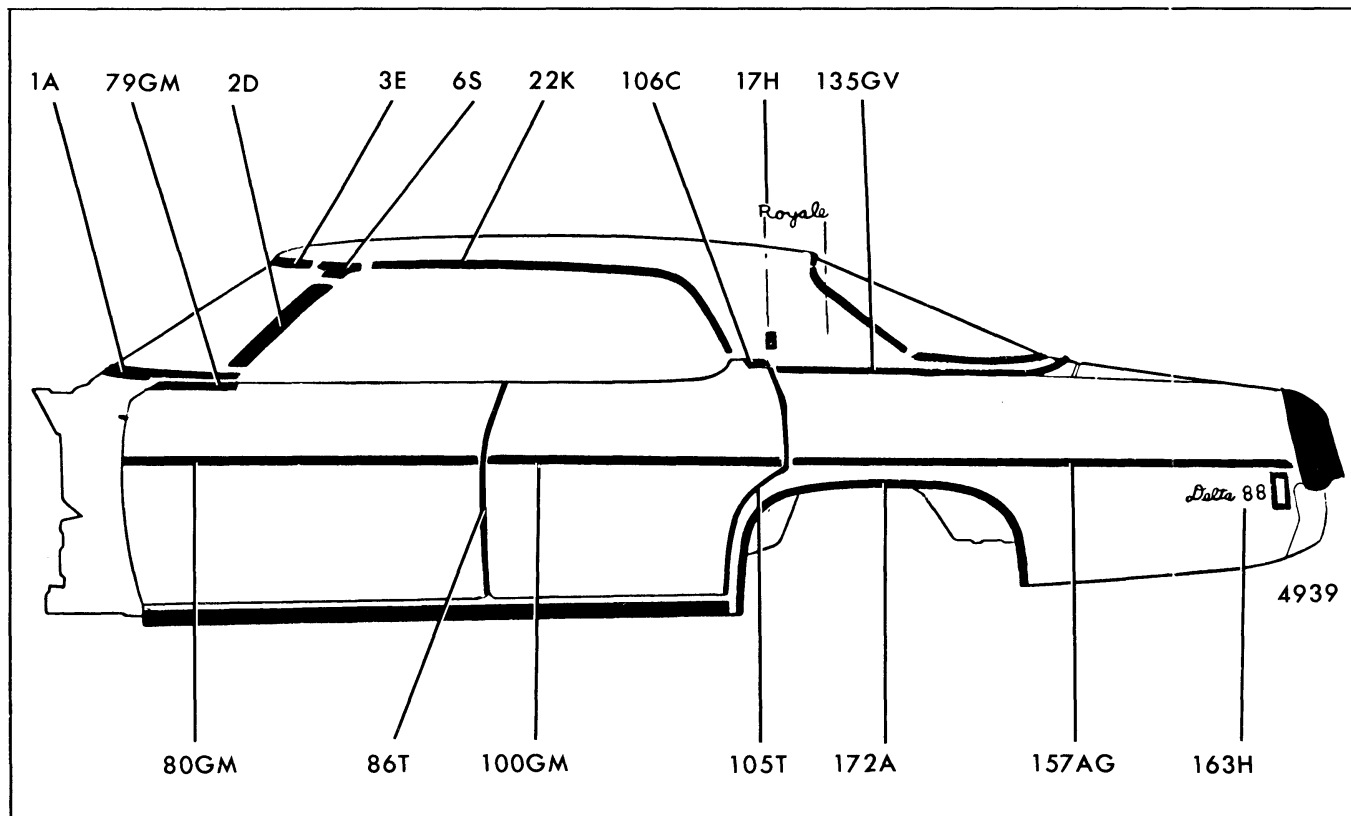


Fig. 11-66-Oldsmobile 3BN39 Styles (3BL39 Similar)



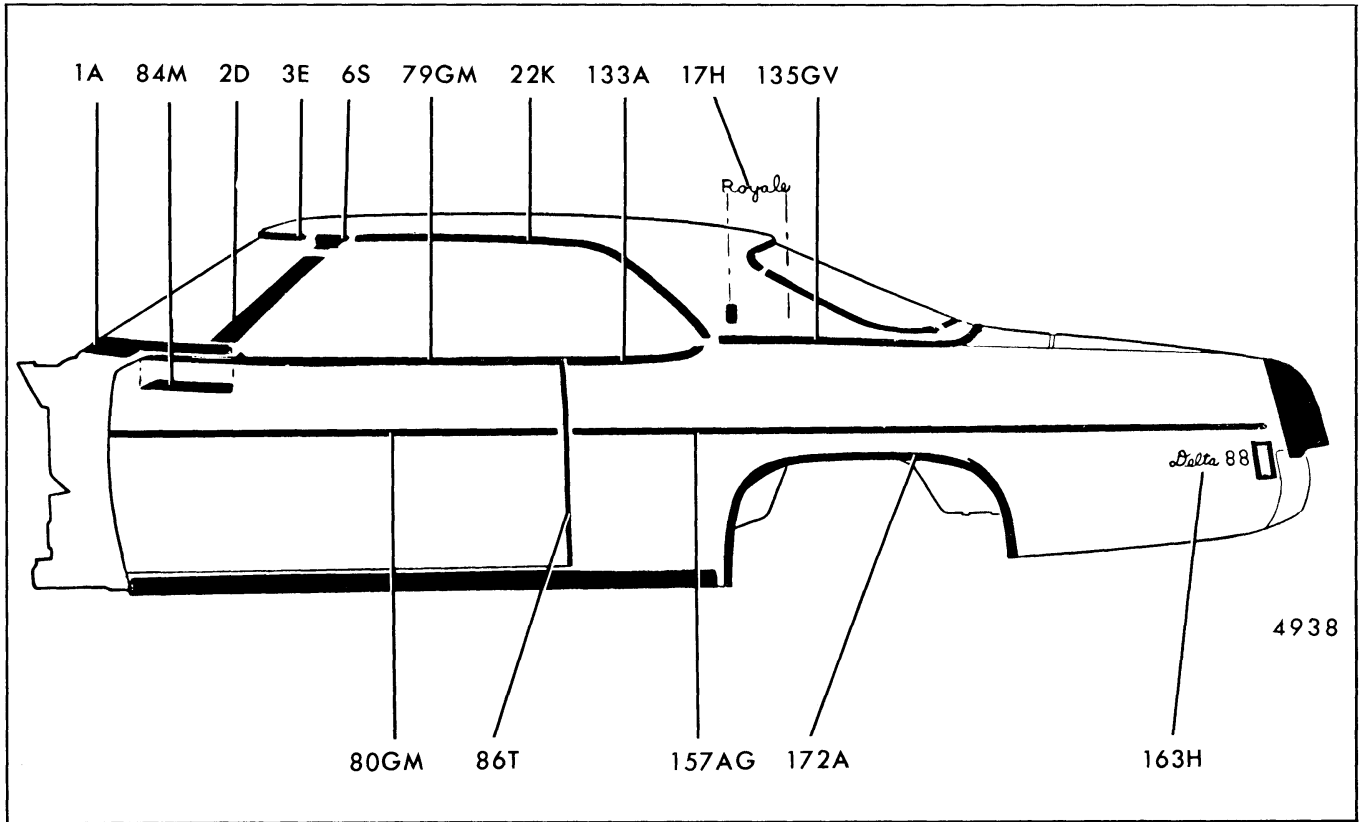


Fig. 11-67-Oldsmobile 3BN57 Styles (3BN67, 3BL57 Similar)

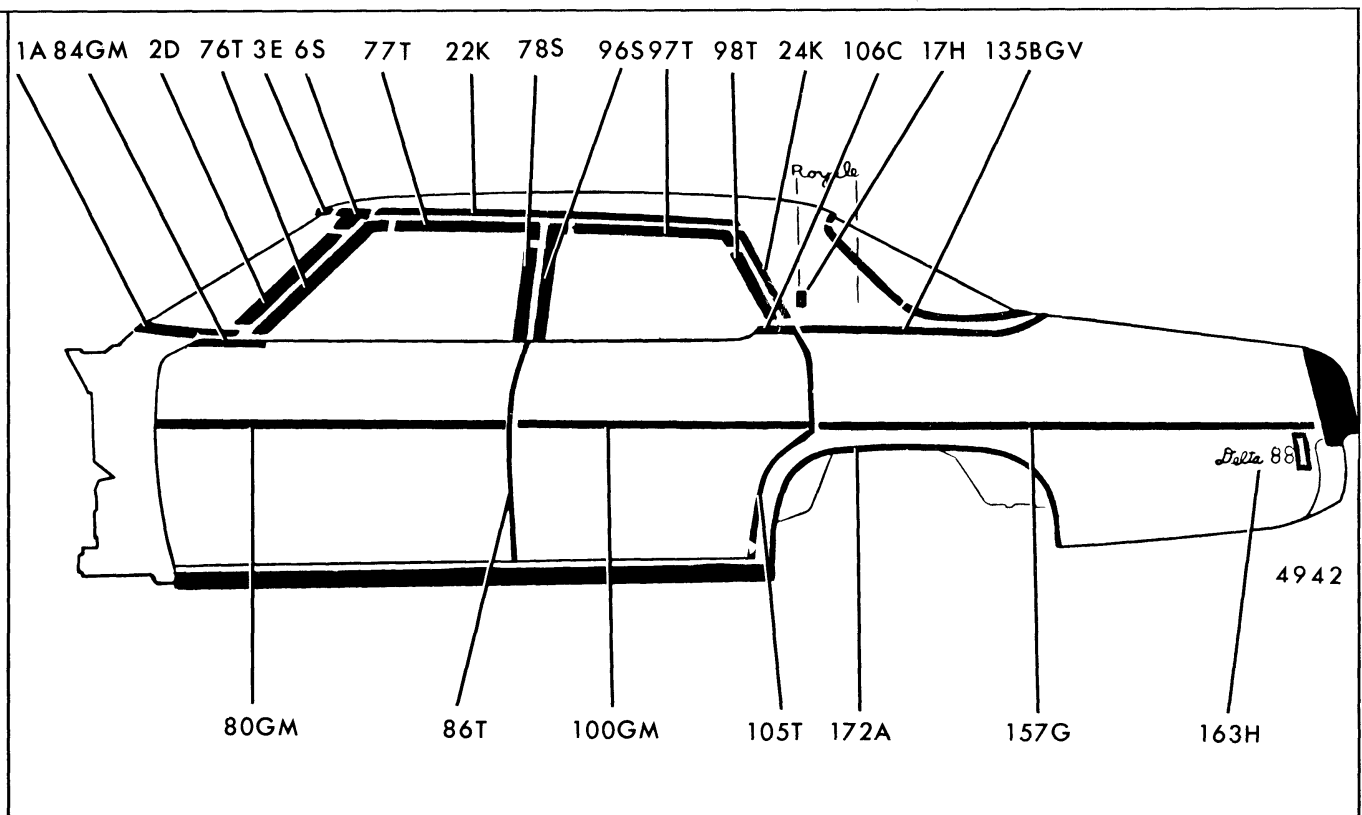


Fig. 11-68-Oldsmobile 3BN69 Styles (3BL69 Similar)

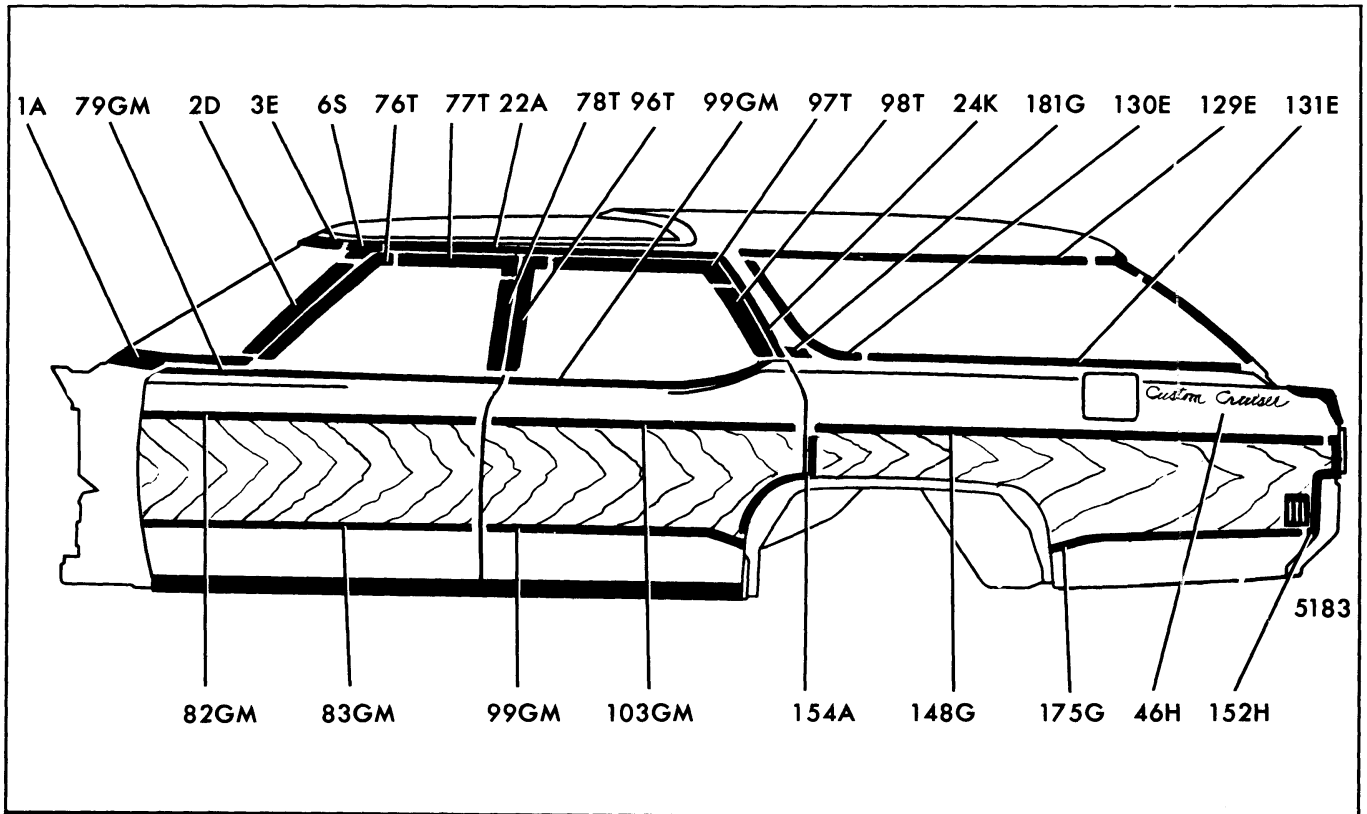


Fig. 11-69-Oldsmobile 3BR45 Styles (3BR35, 3BQ35-45 Similar)

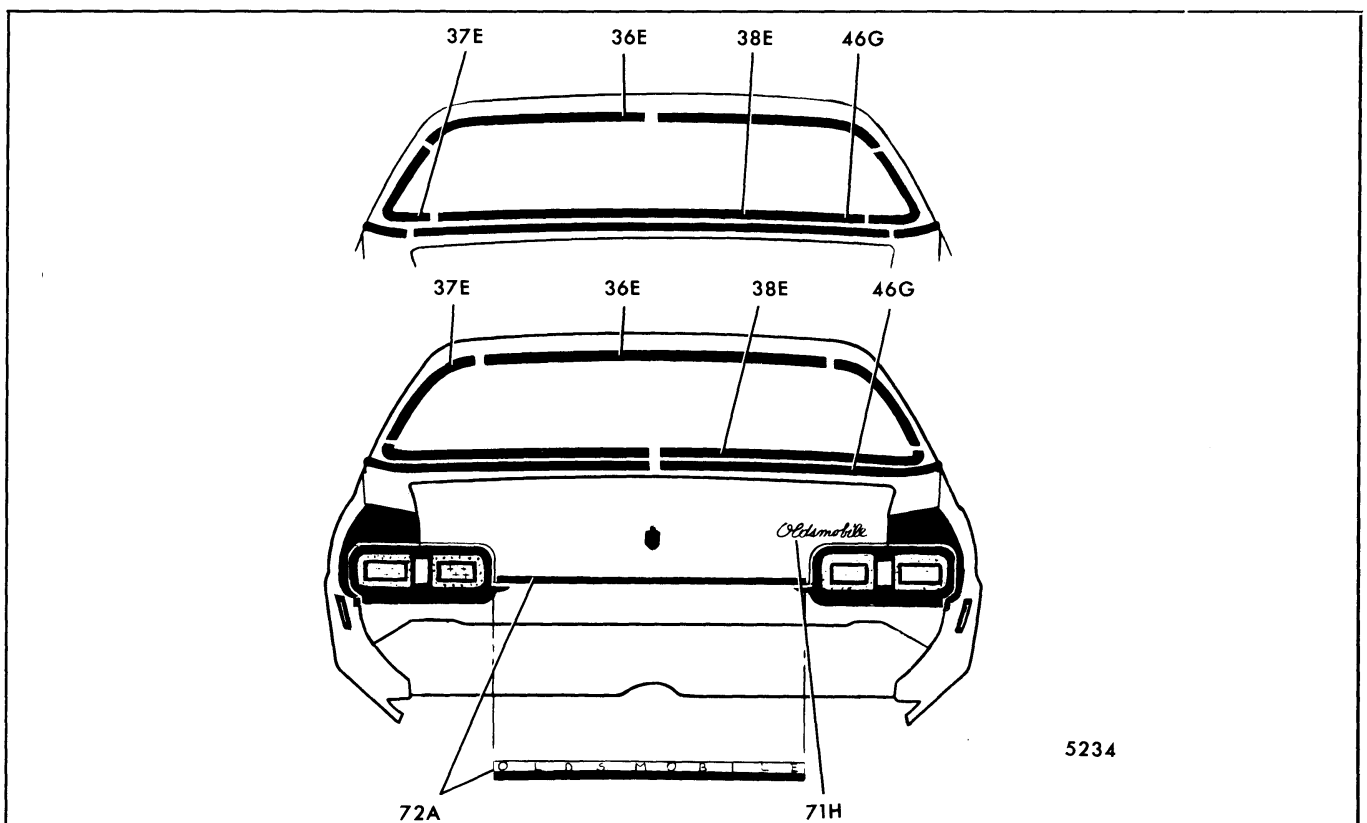


Fig. 11-70-Oldsmobile 3BL, 3BN Styles

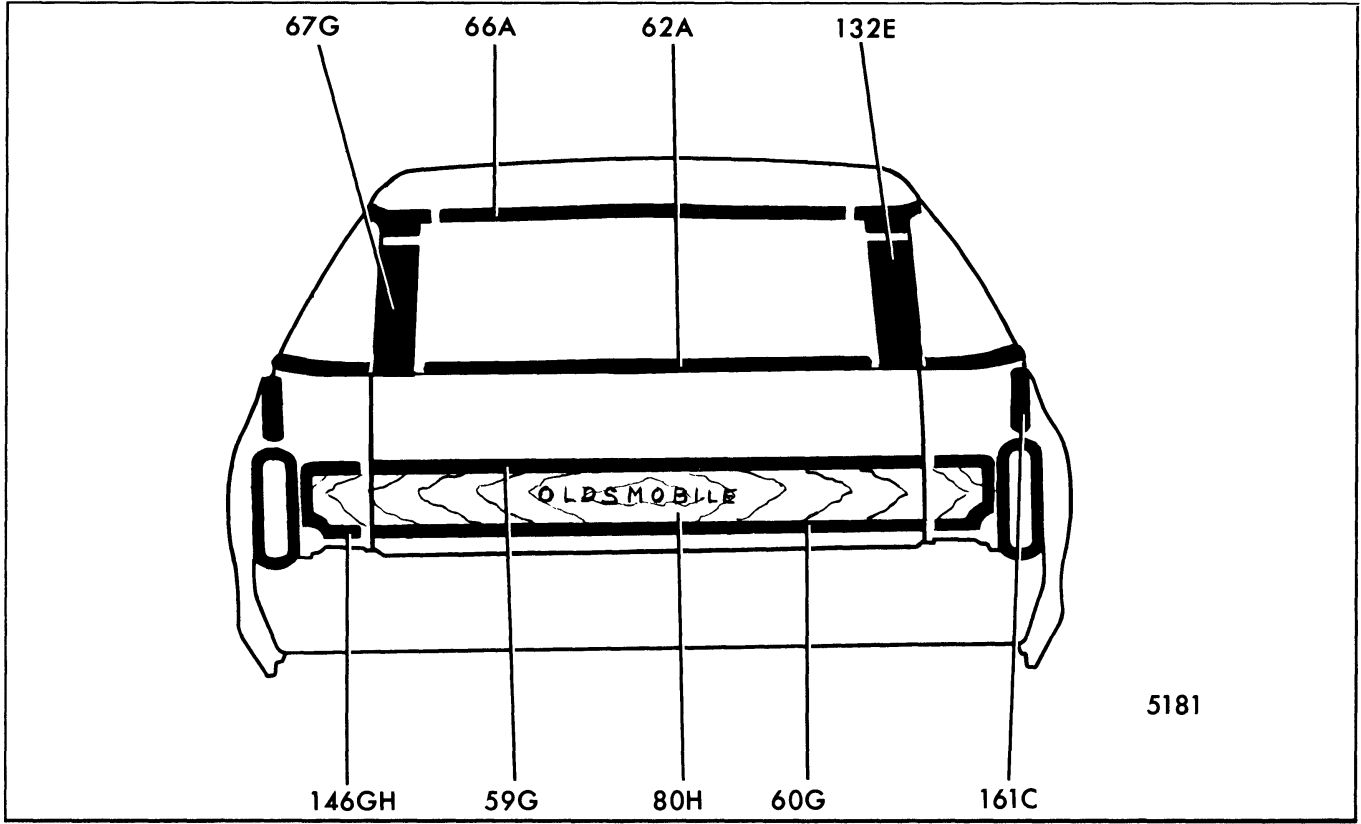


Fig. 11-71-Oldsmobile 3BQ35-45, 3BR35-45 Styles

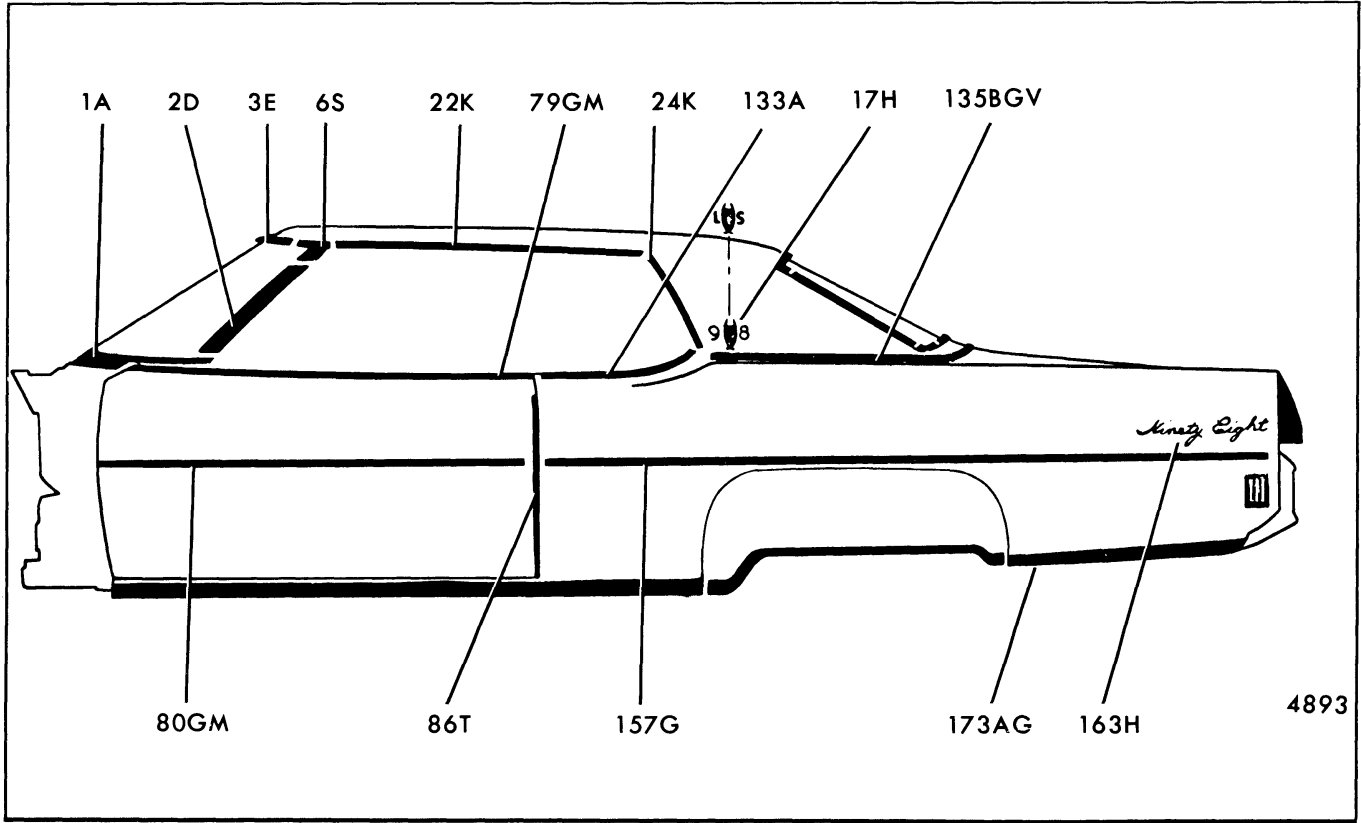


Fig. 11-72-Oldsmobile 3CV37 Styles (3CT37 Similar)

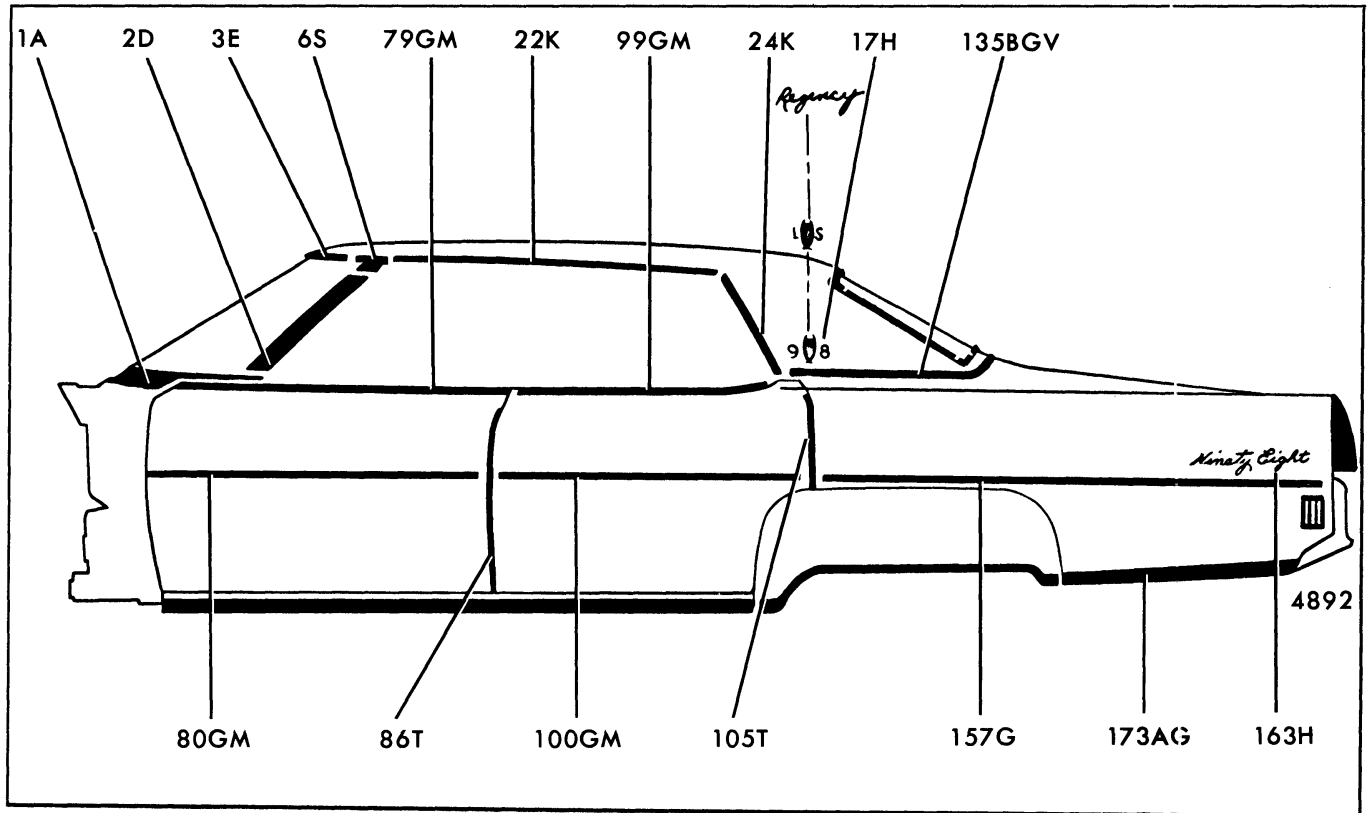


Fig. 11-73-Oldsmobile 3CV39 Styles (3CT39 Similar)

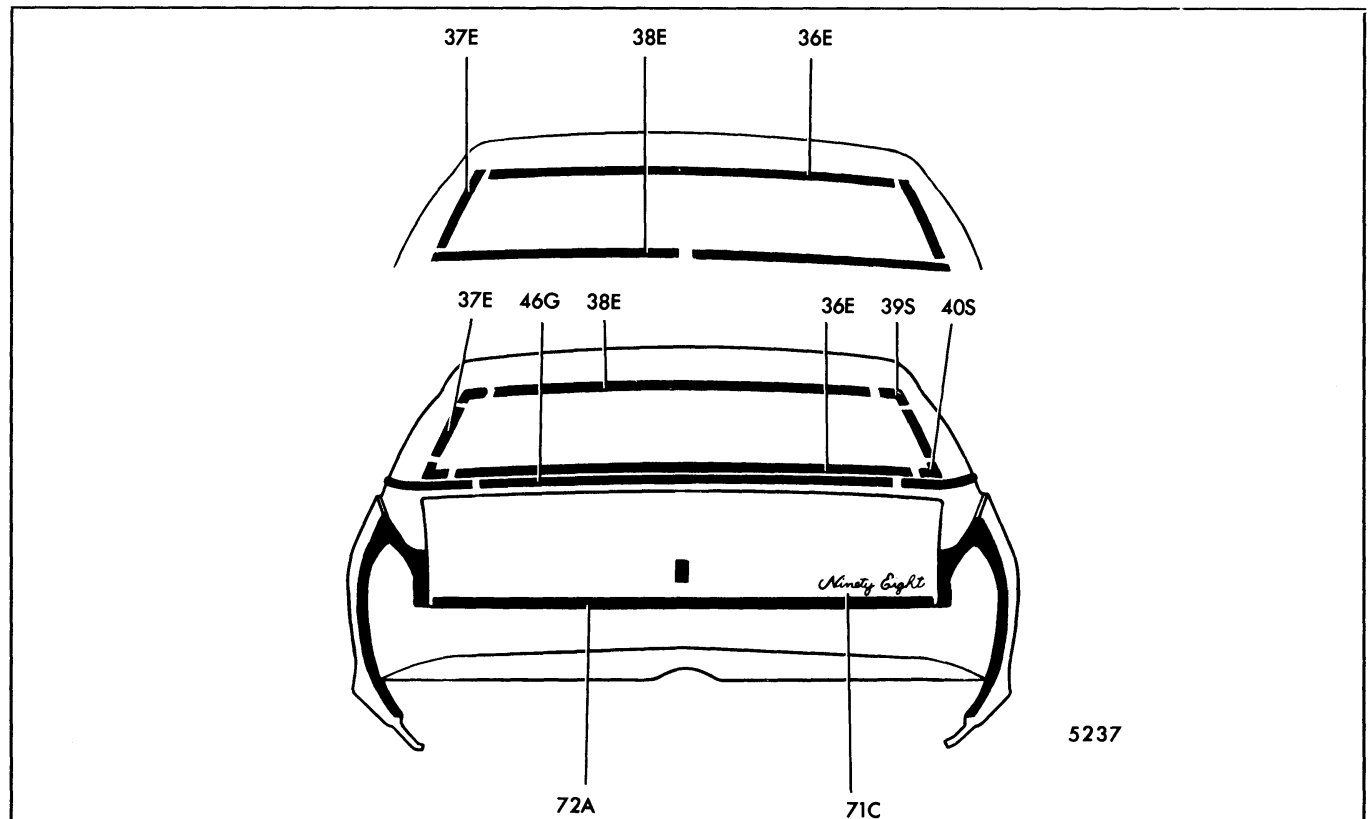


Fig. 11-74-Oldsmobile 3CV39 Styles (3CT39, 3CV, 3CT37 Similar)

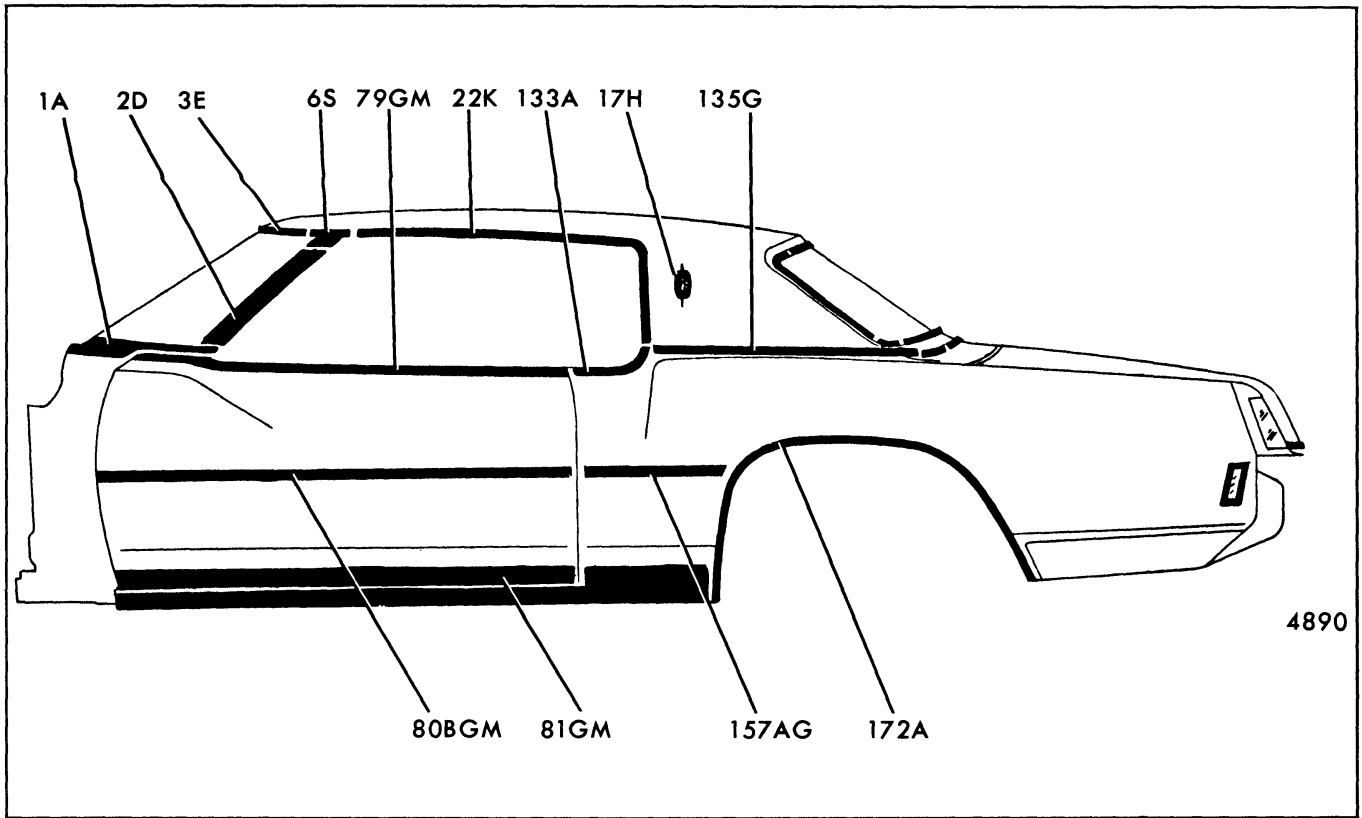


Fig. 11-75-Oldsmobile 3EZ57 Syles (3EY57 Similar)

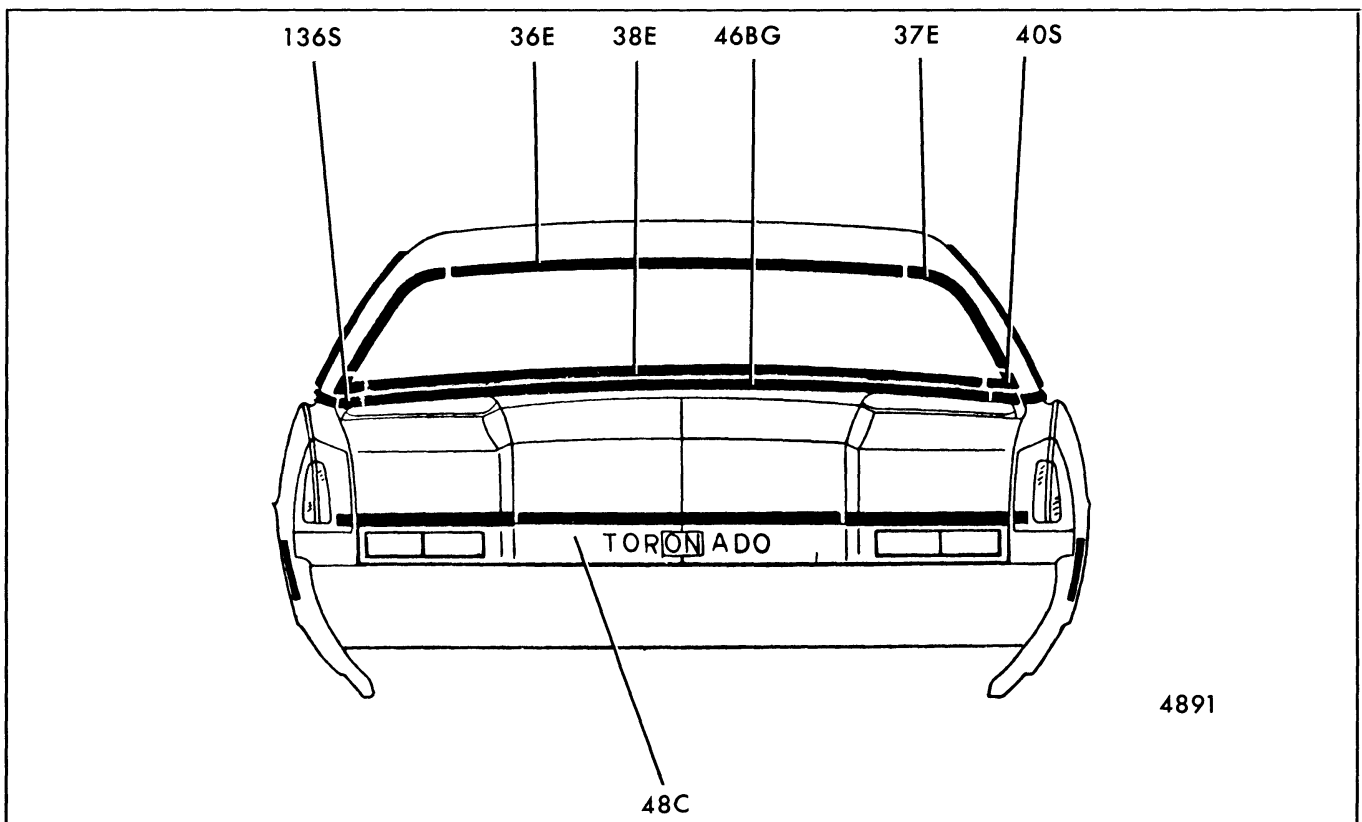


Fig. 11-76-Oldsmobile 3EZ57 Syles (3EY57 Similar)

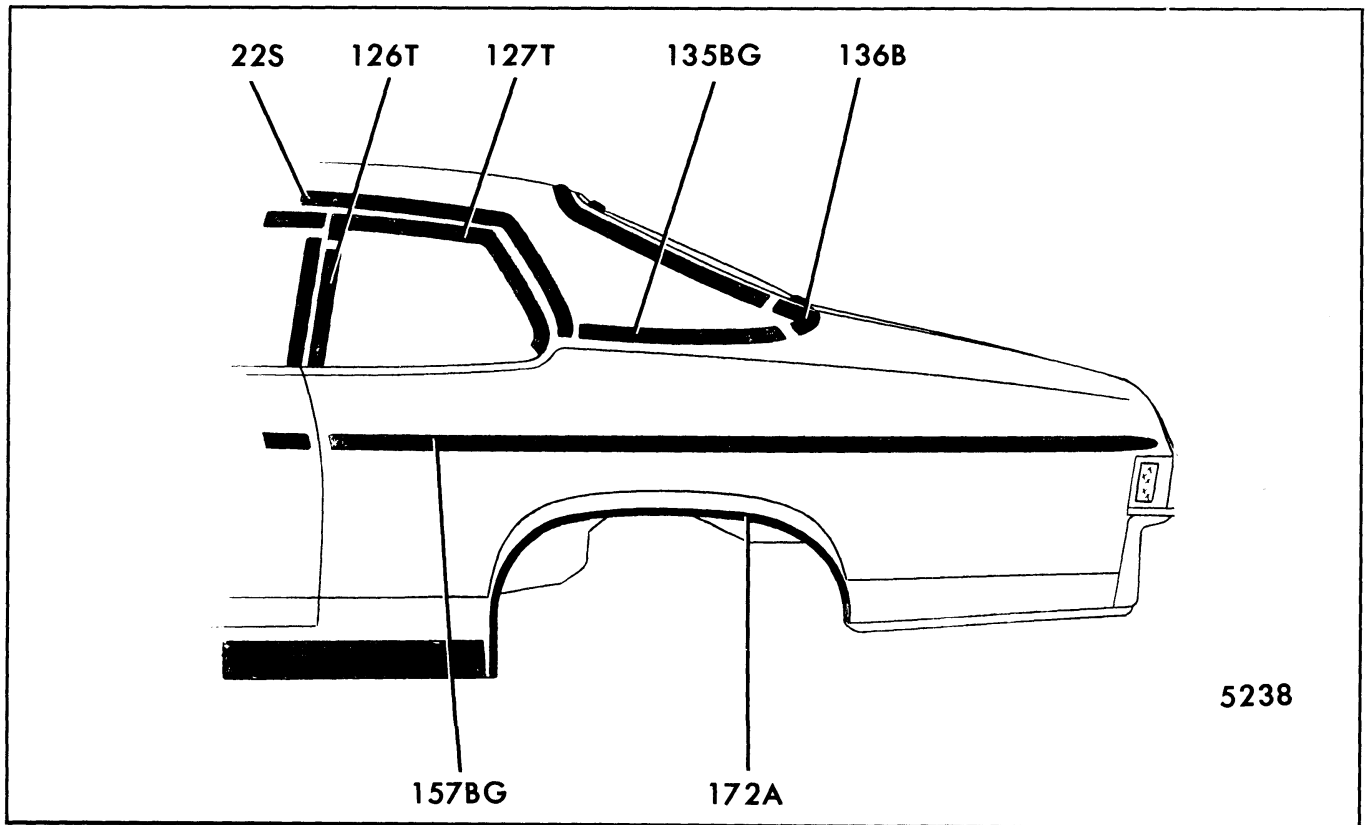


Fig. 11-77-Oldsmobile 3XB17 Styles

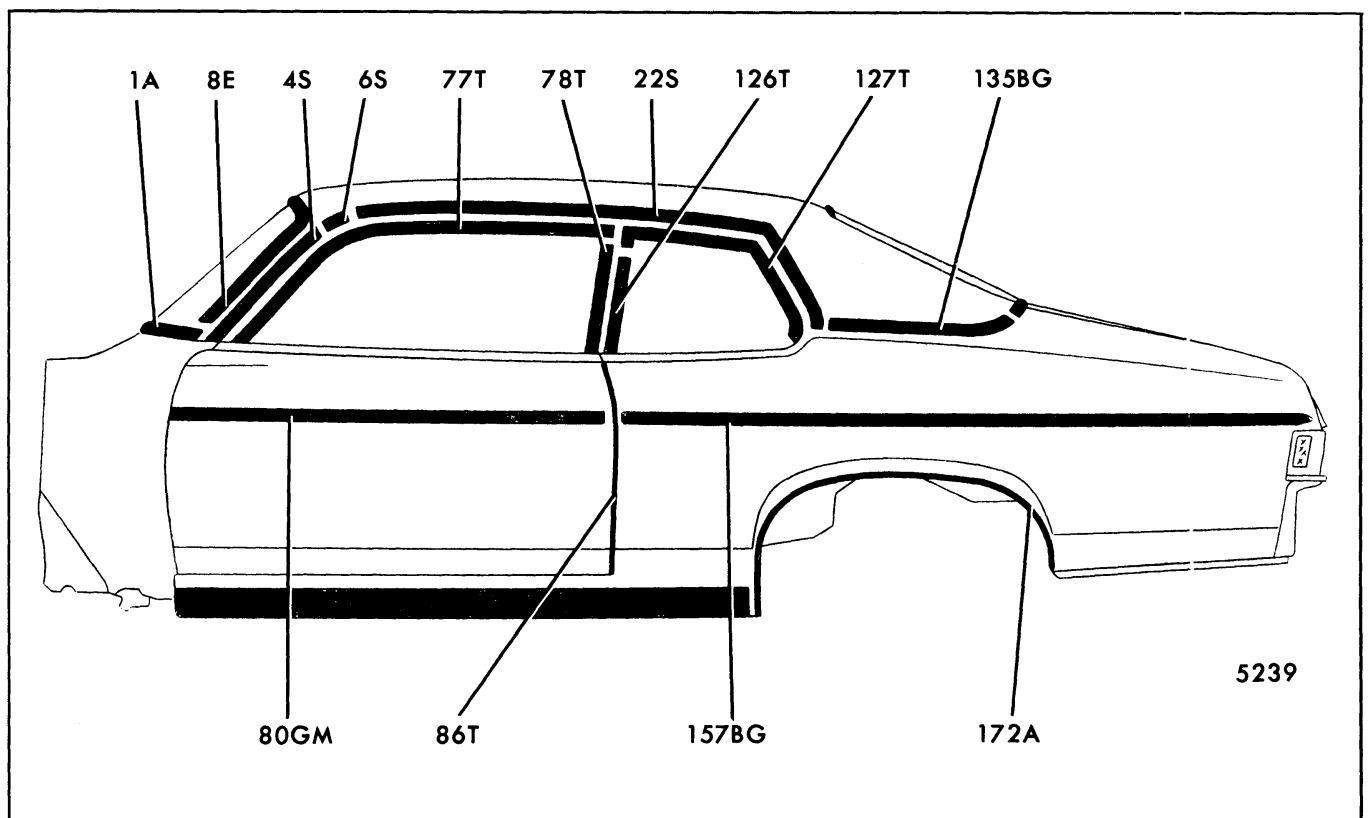


Fig. 11-78-Oldsmobile 3XB27 Styles

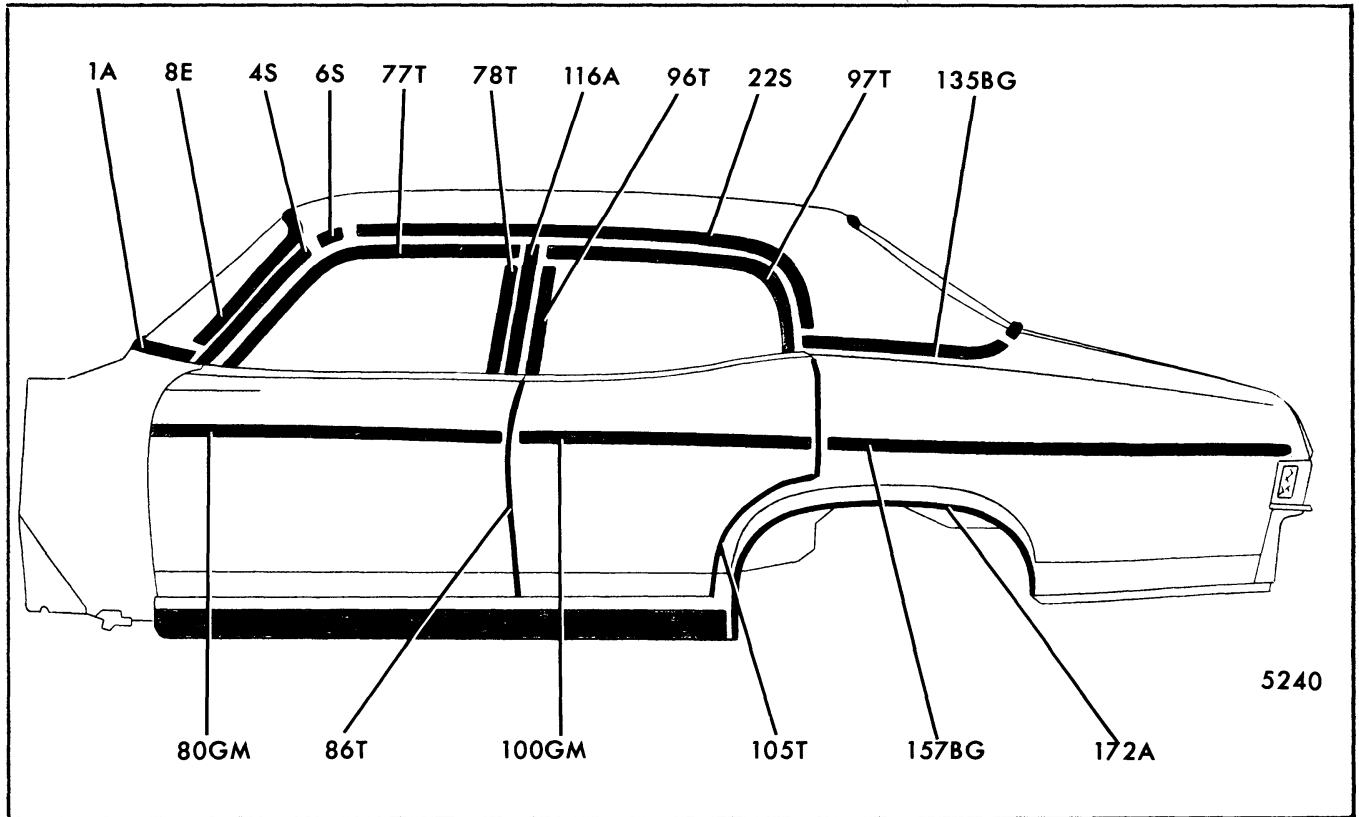


Fig. 11-79-Oldsmobile 3XB69 Styles

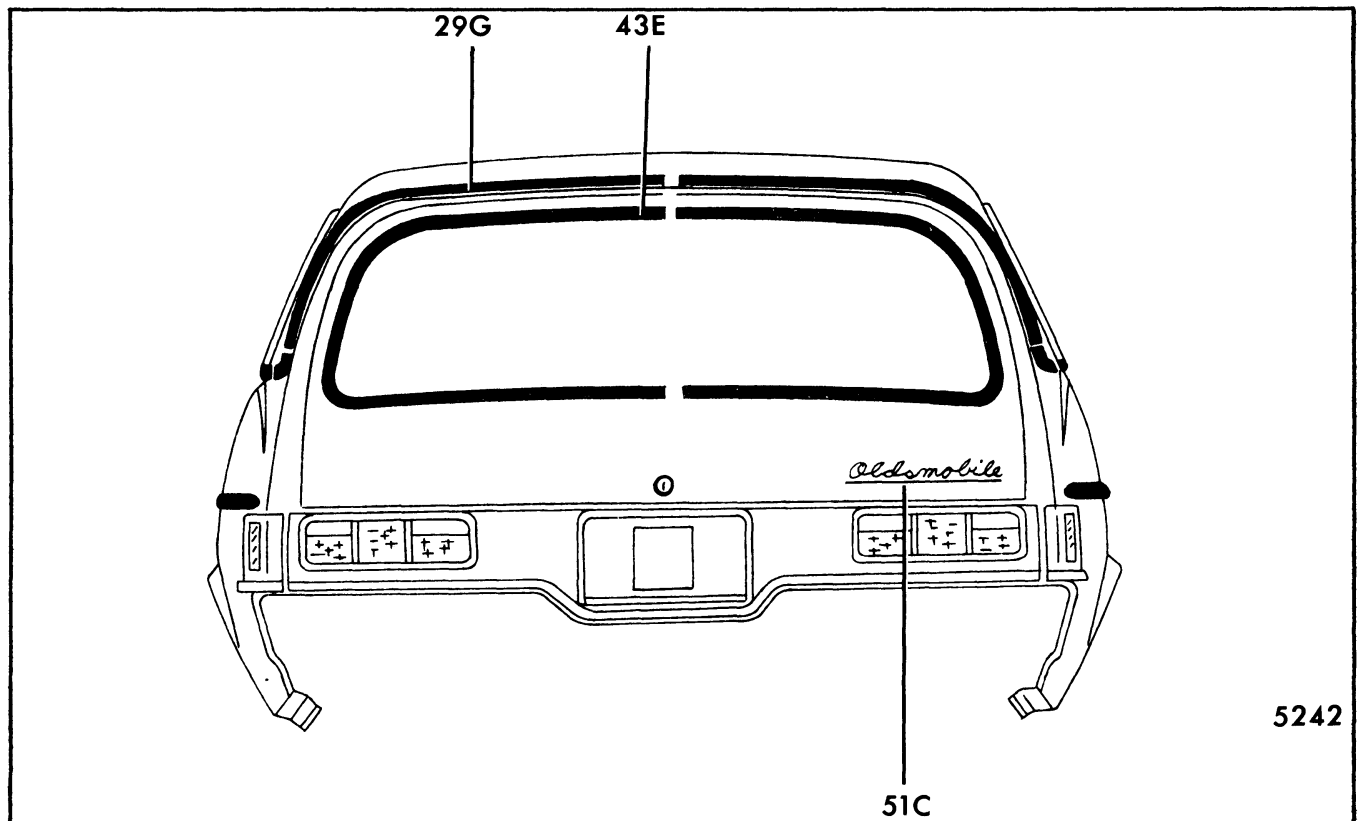


Fig. 11-80-Oldsmobile 3XB17 Styles

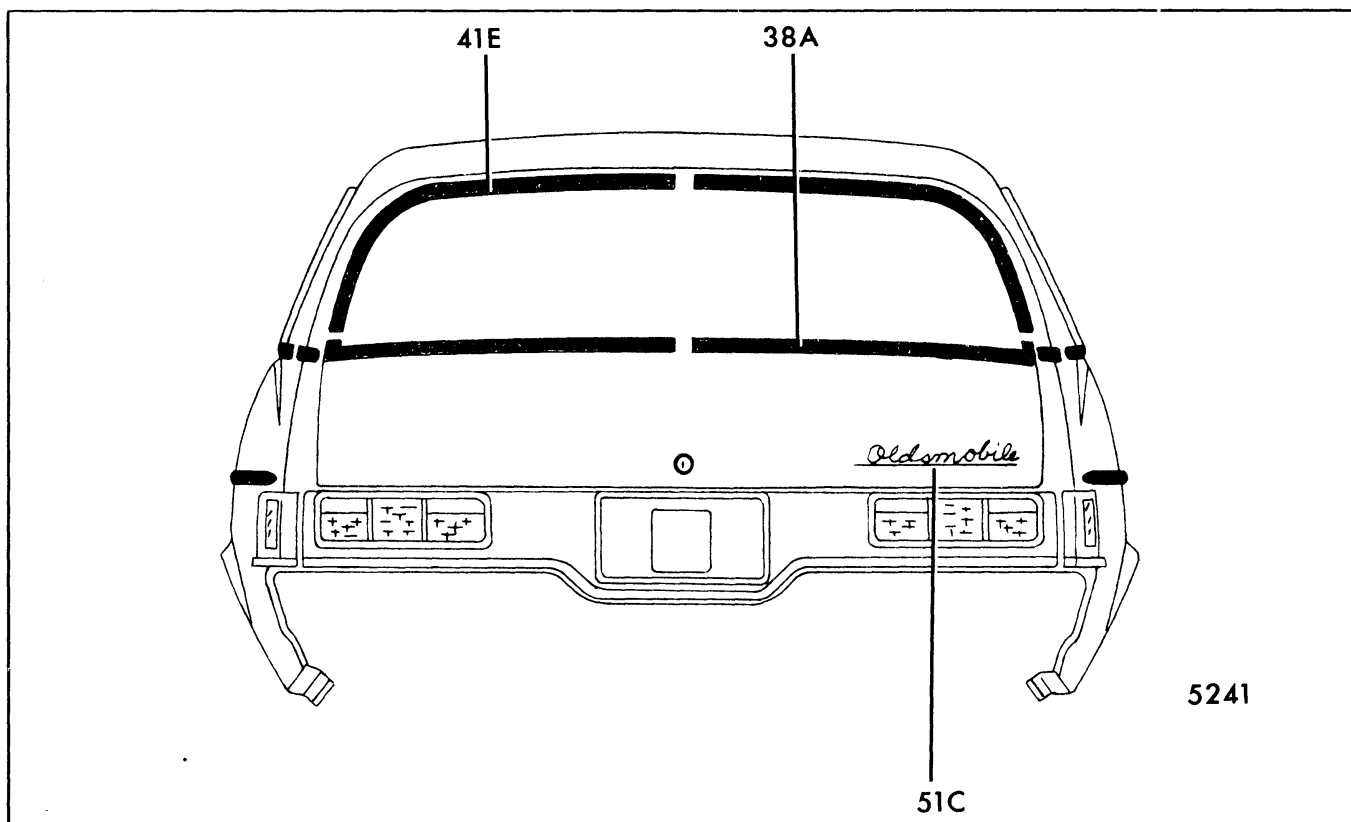


Fig. 11-81-Oldsmobile 3XB27 Styles (3XB69 Similar)

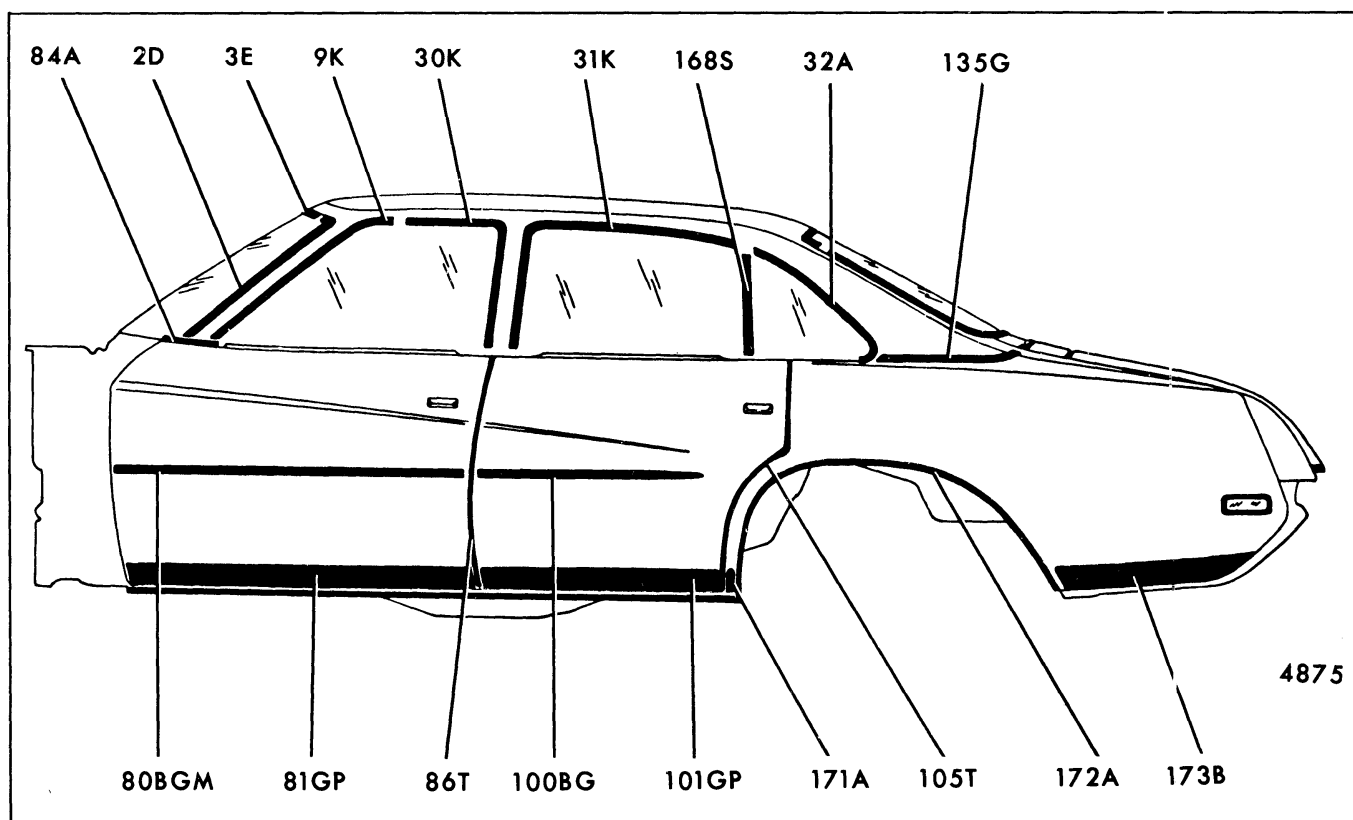


Fig. 11-82-Buick 4AH29 Styles (4AD29 Similar)



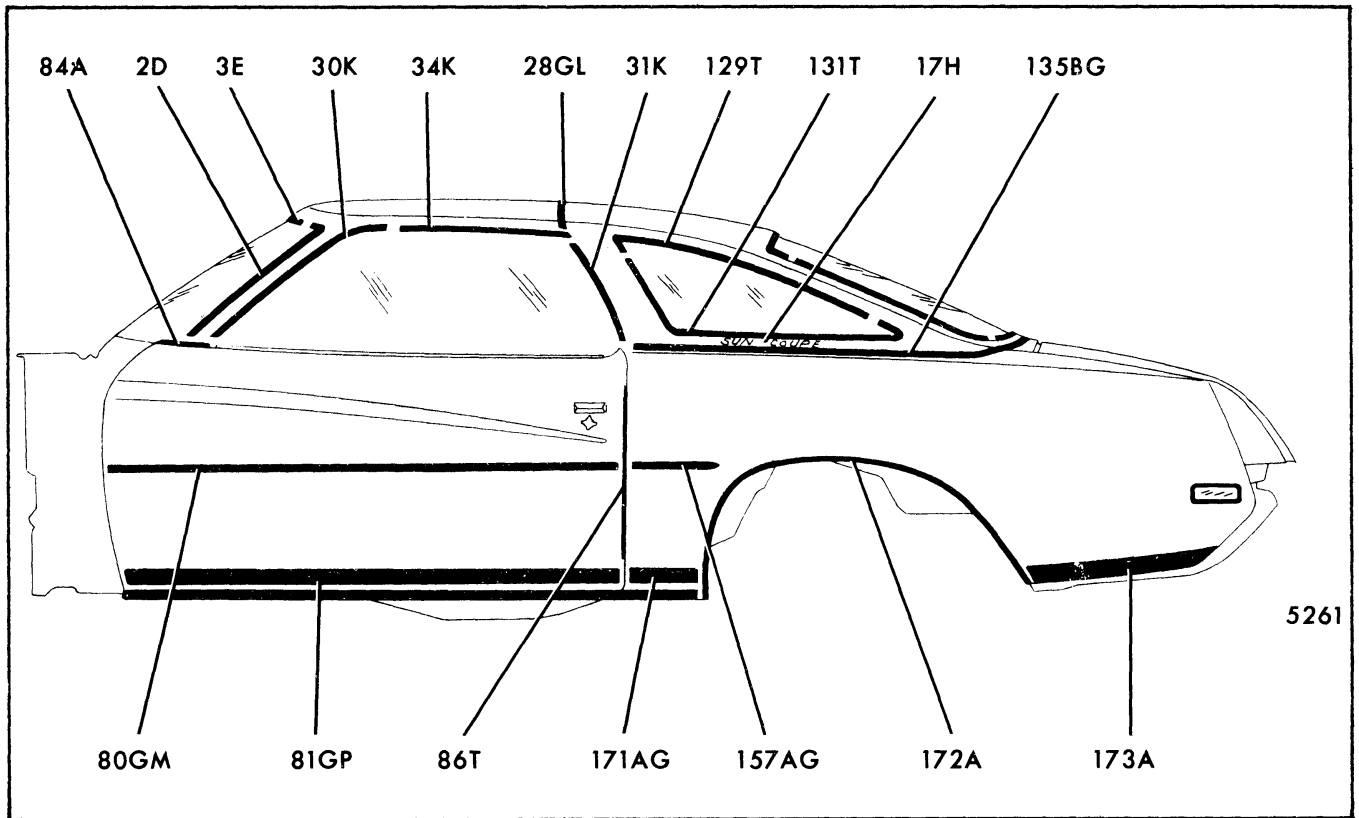


Fig. 11-83-Buick 4AD37 Syles

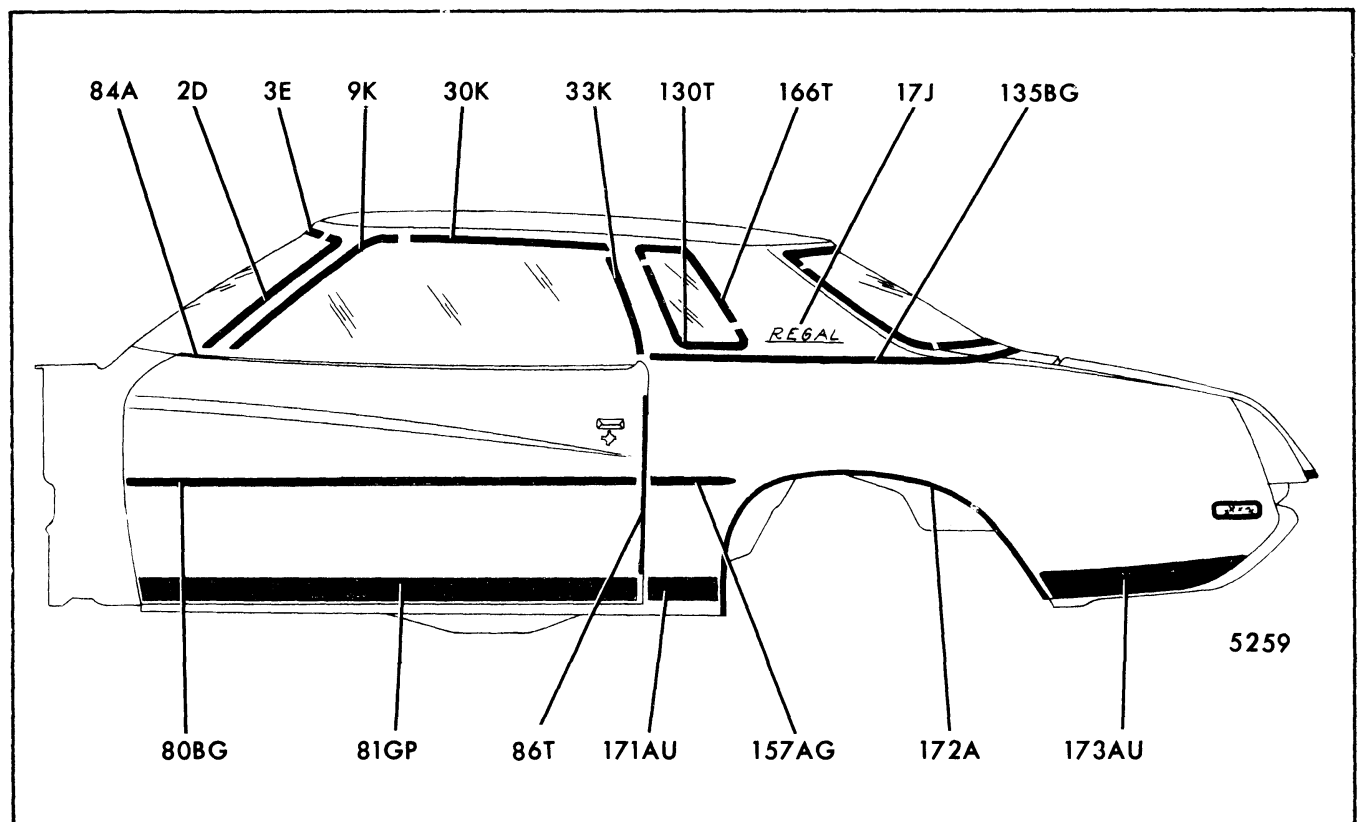


Fig. 11-84-Buick 4AJ57 Styles (4AH57 Similar)

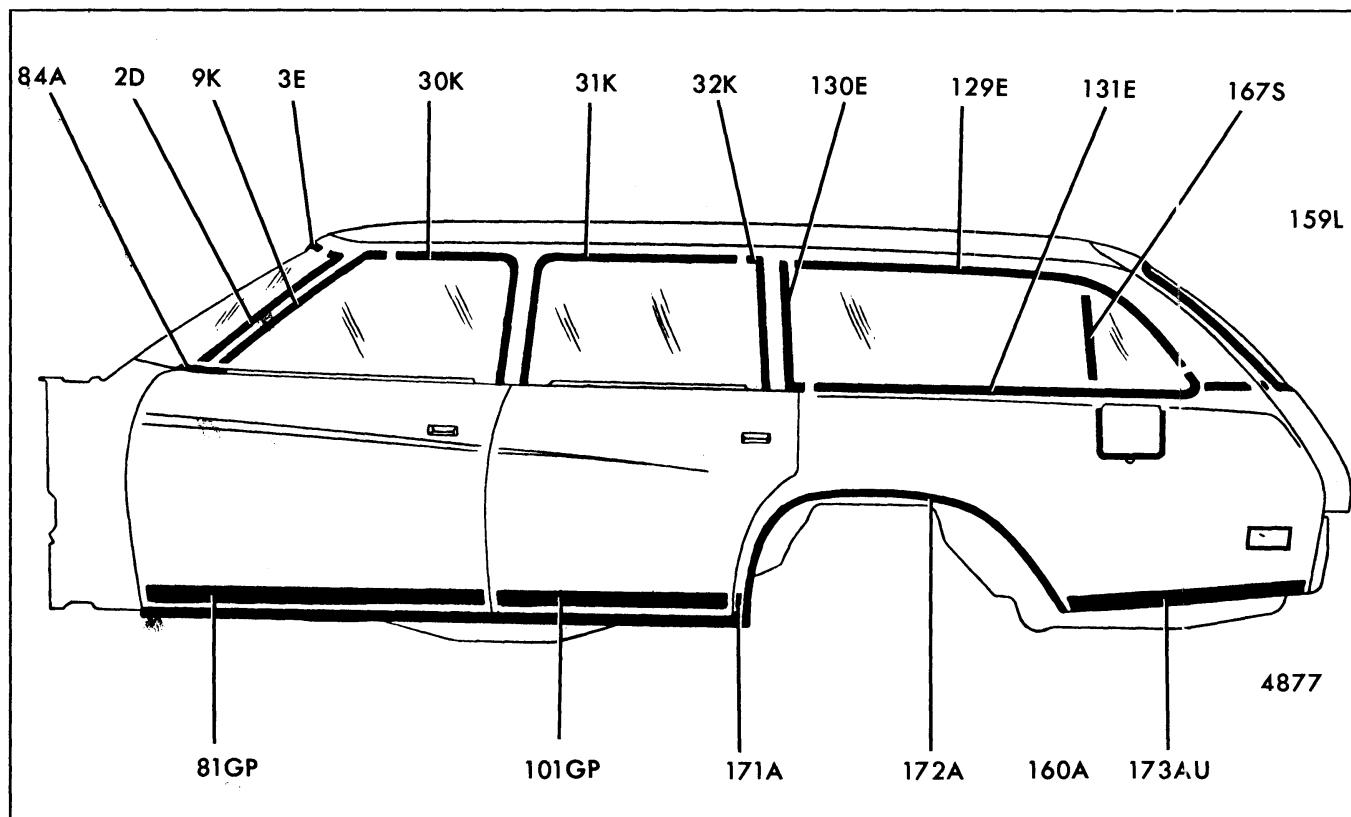


Fig. 11-85-Buick 4AK35 Styles (4AF35 Similar)

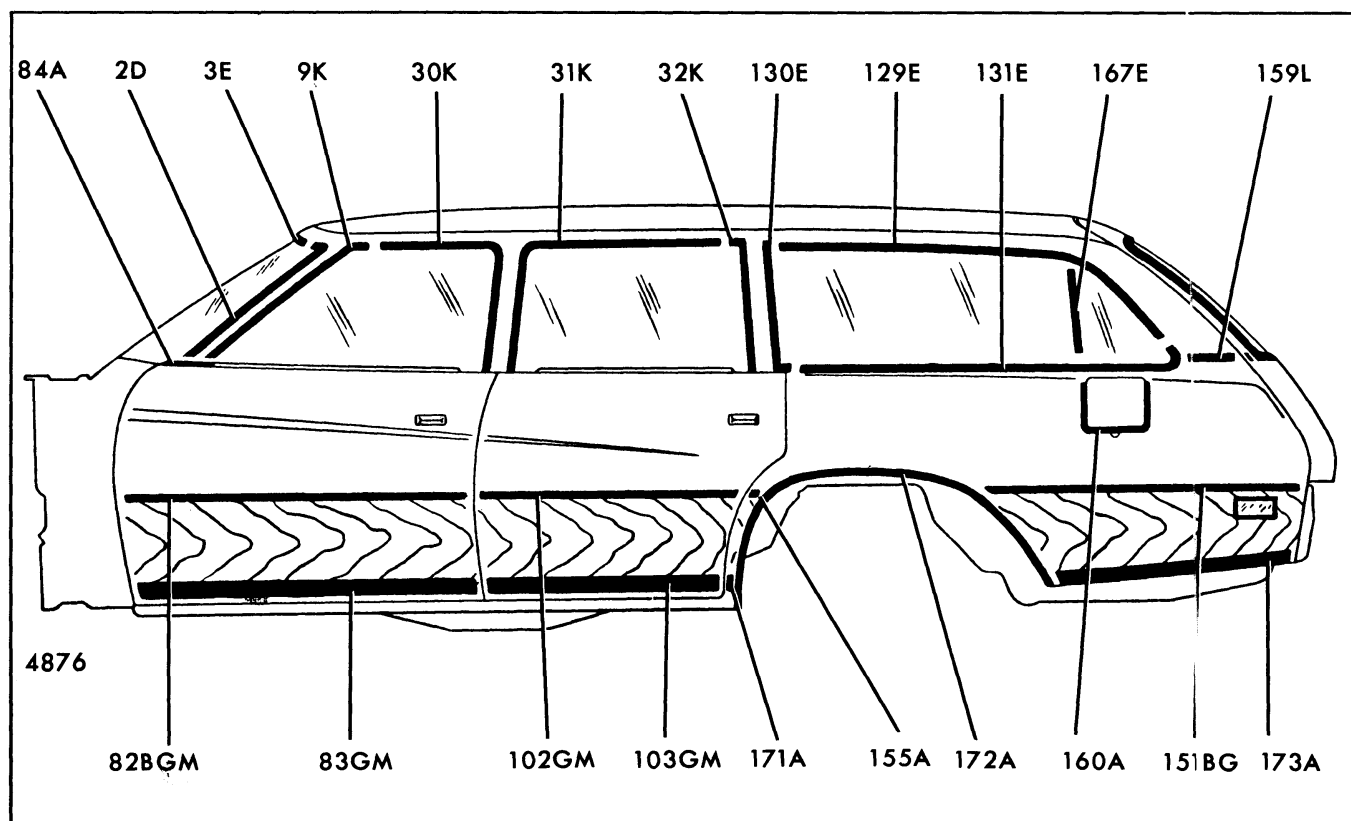


Fig. 11-86-Buick 4AK35 Styles (4AF35 Similar)

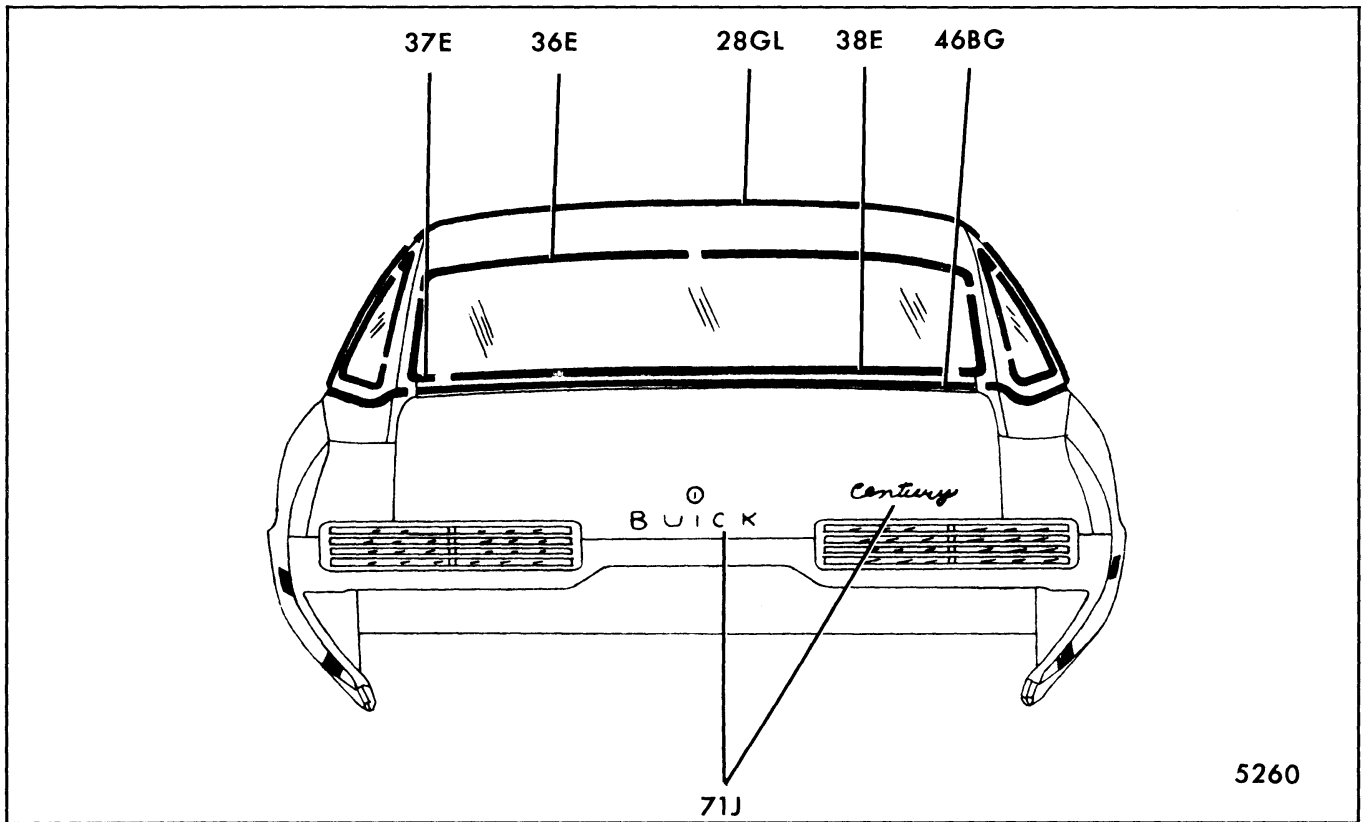


Fig. 11-87-Buick 4AH29 Styles (4AD29, 4AD37 Similar)

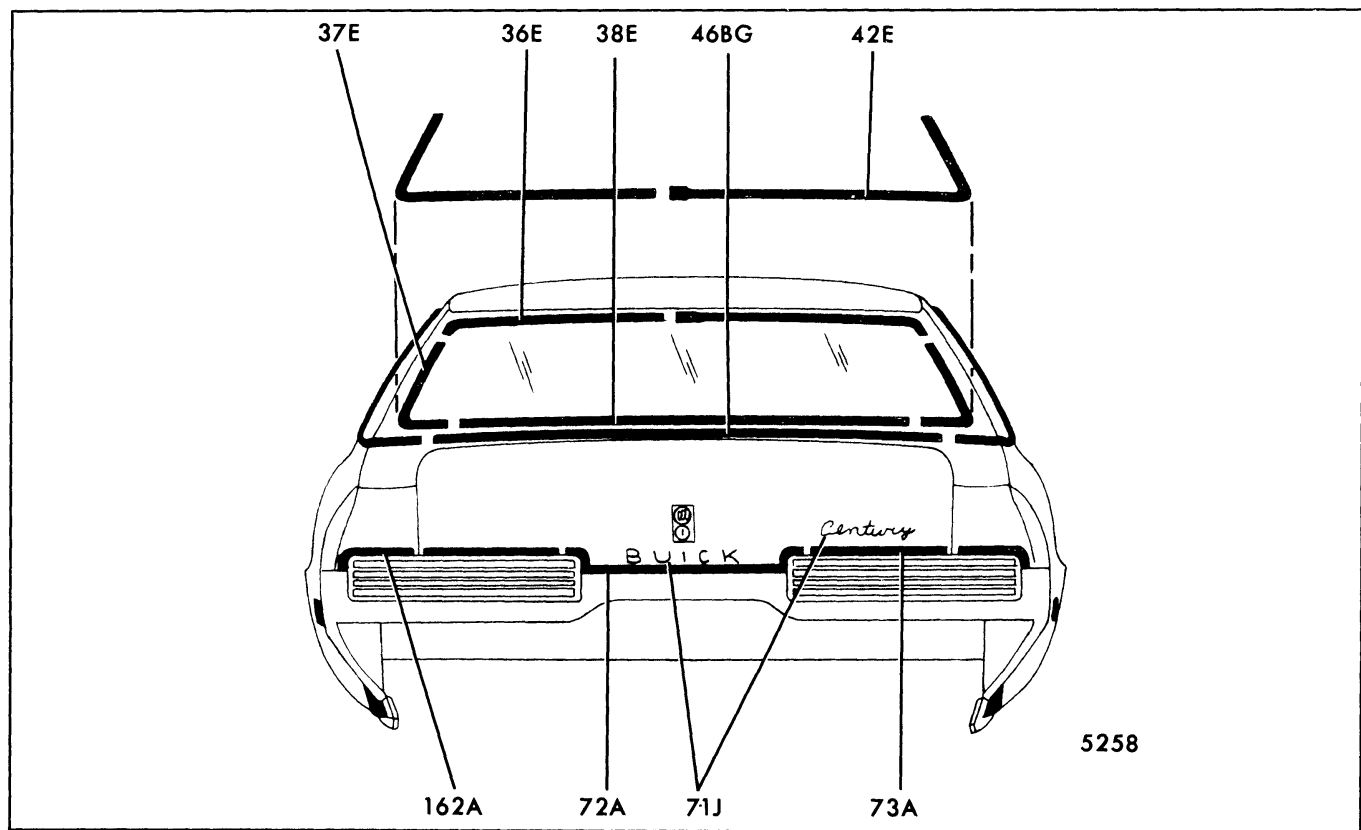


Fig. 11-88-Buick 4AJ37 Styles

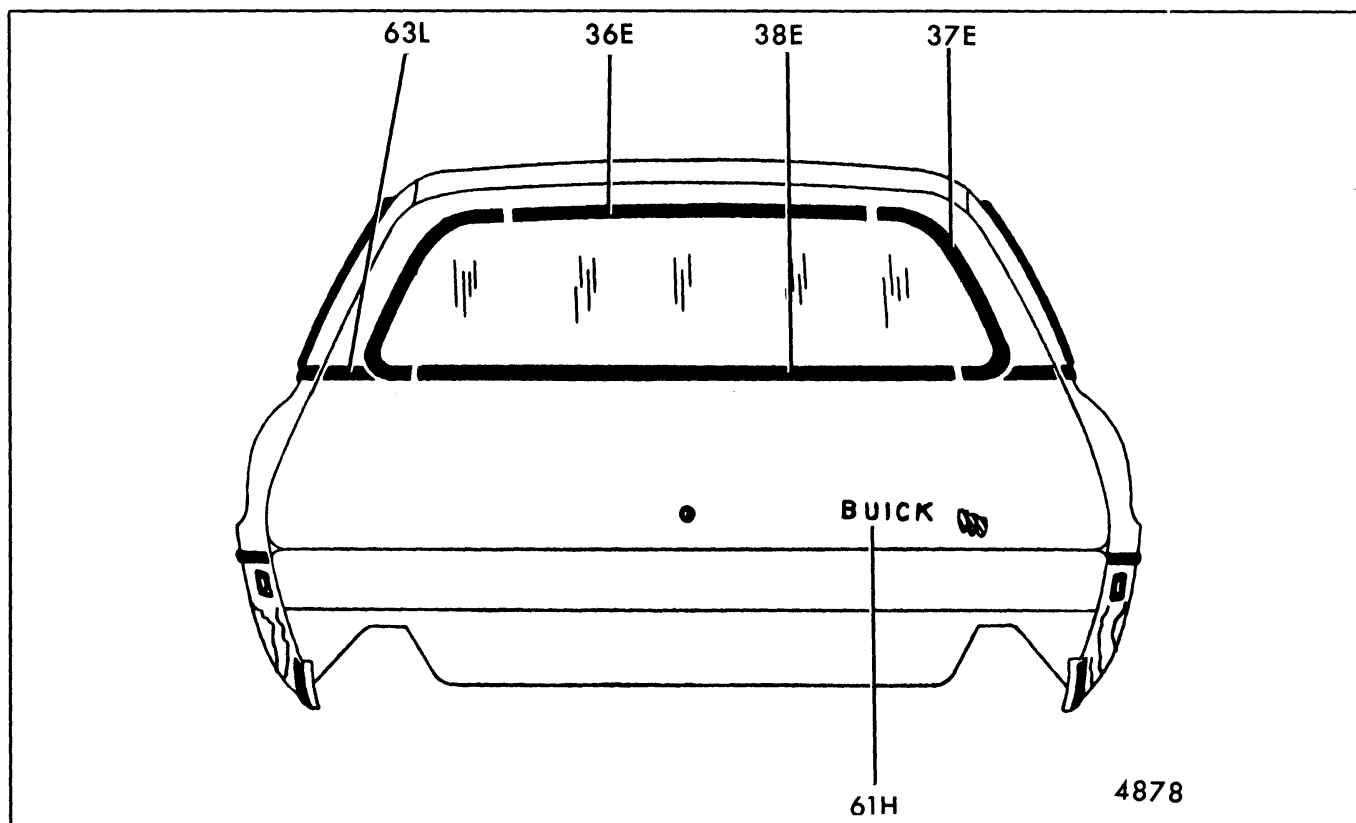


Fig. 11-89-Buick 4AK35 Styles (4AF35 Similar)

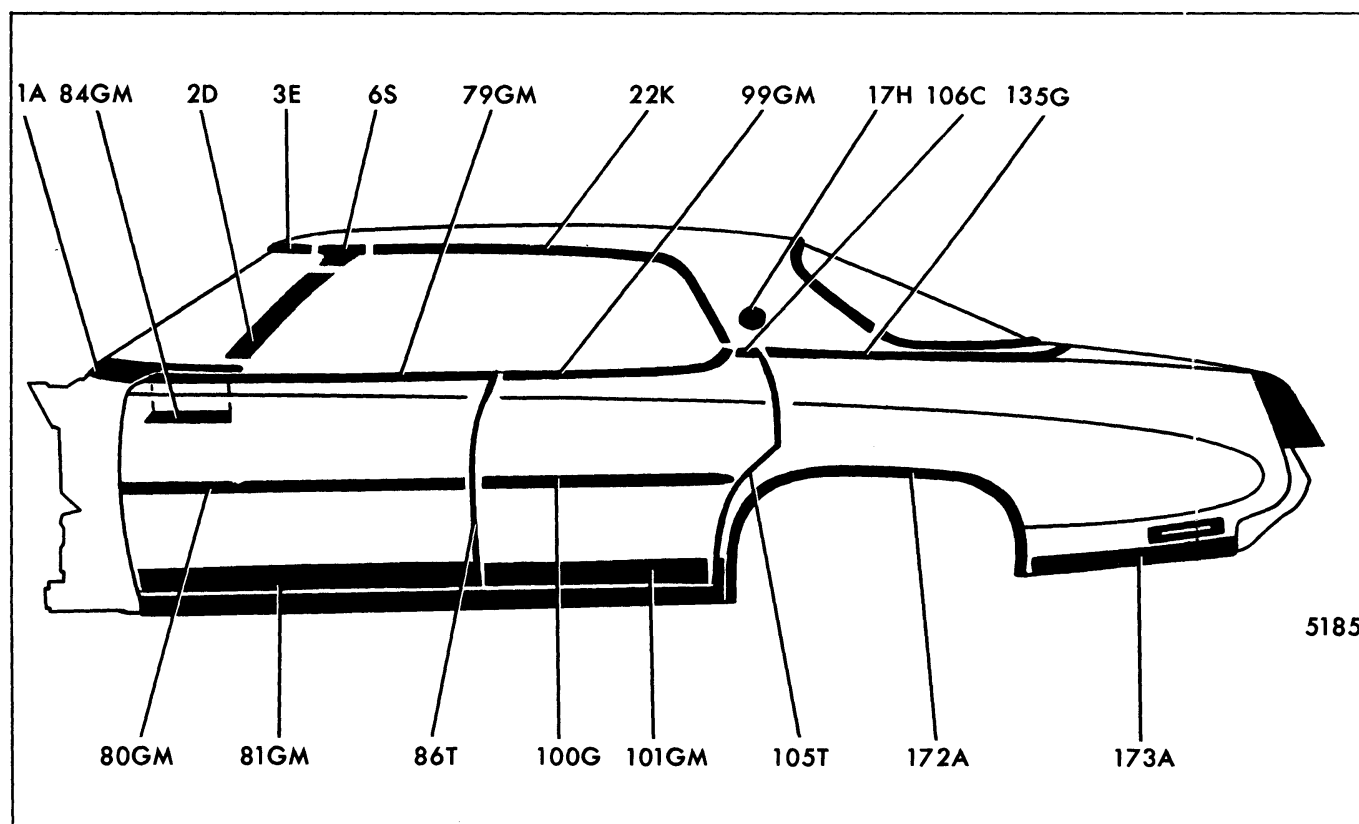


Fig. 11-90-Buick 4BP39 Styles (4BN, 4BL39 Similar)

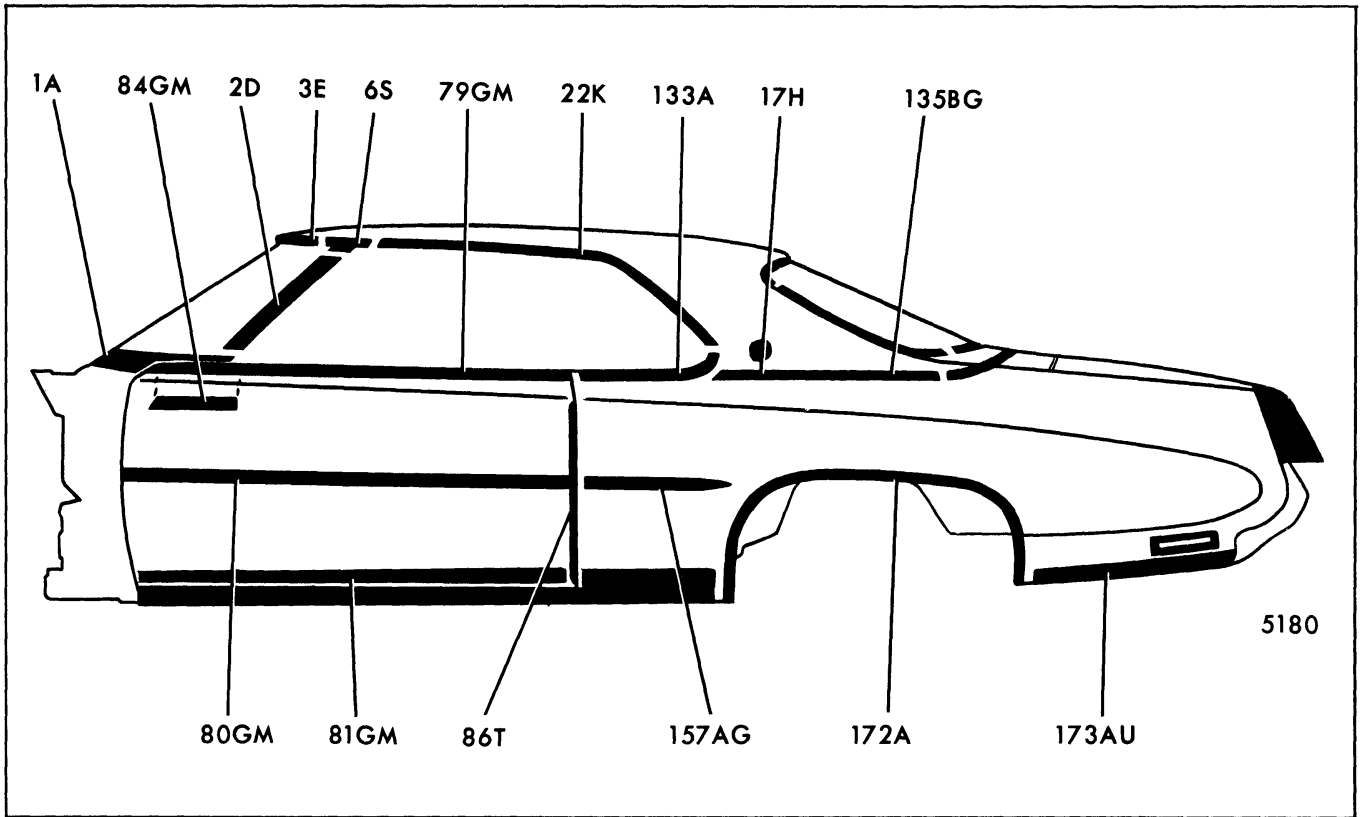


Fig. 11-91-Buick 4BP57 Styles (4BN, 4BL57, 4BP67 Similar)

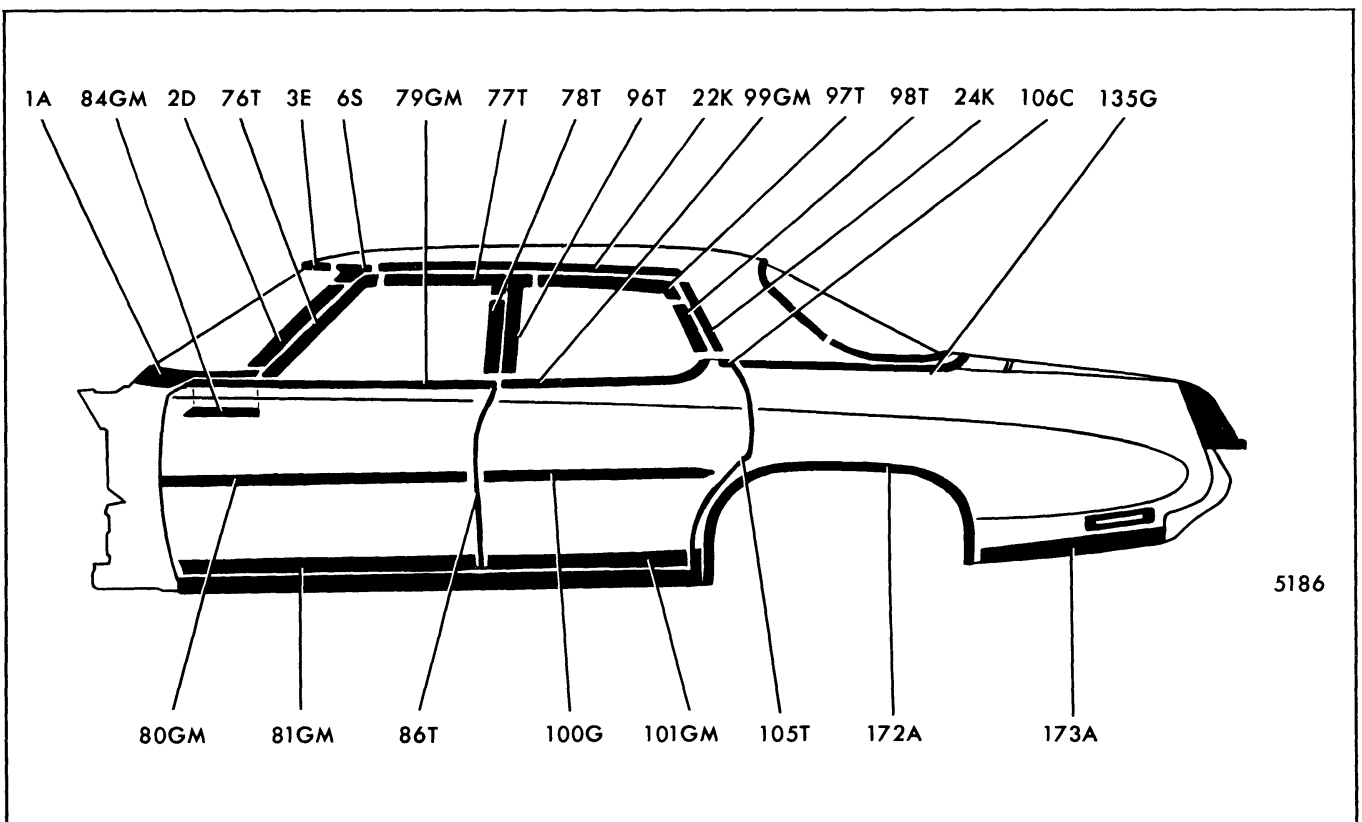


Fig. 11-92-Buick 4BN69 Styles (4BL69 Similar)

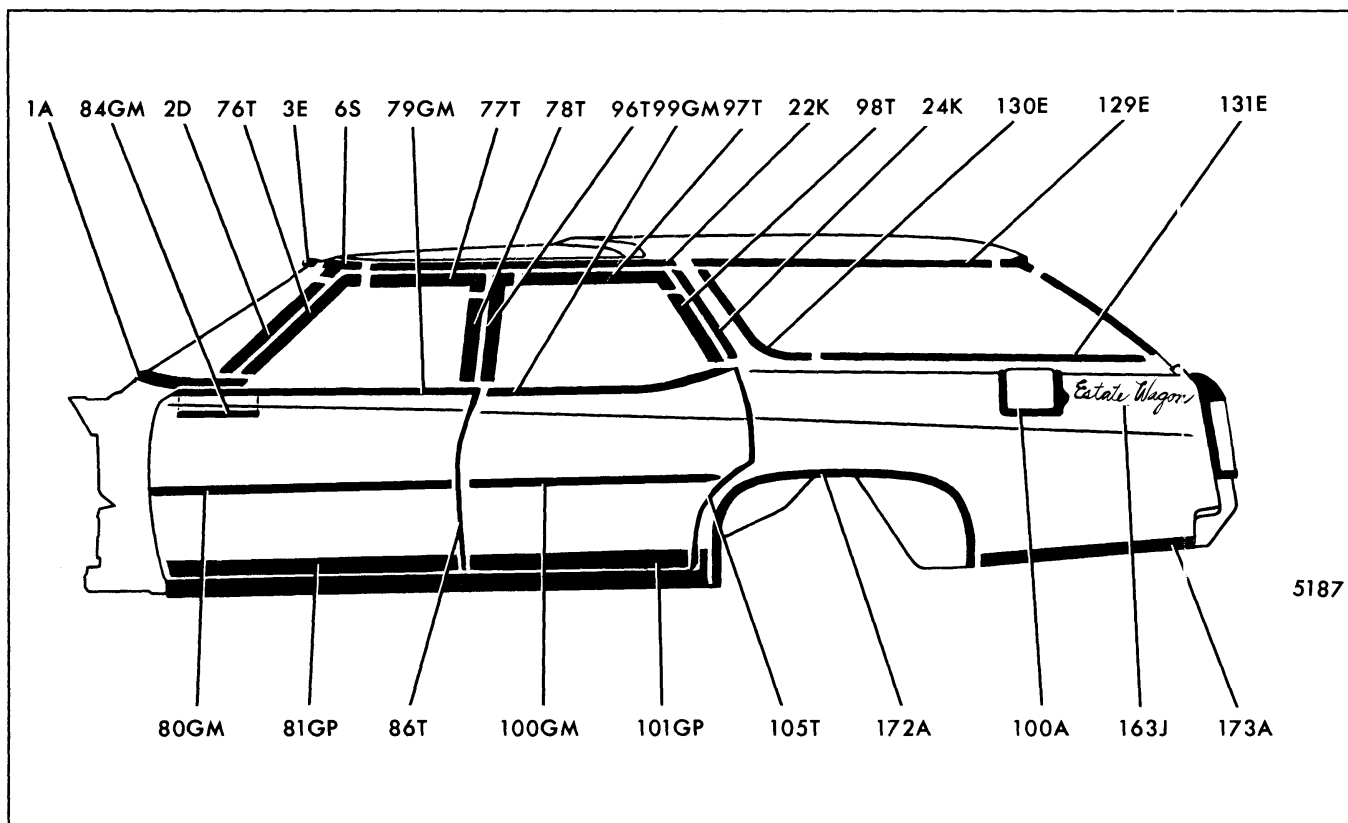


Fig. 11-93-Buick 4BR45 Styles (4BR35 Similar)

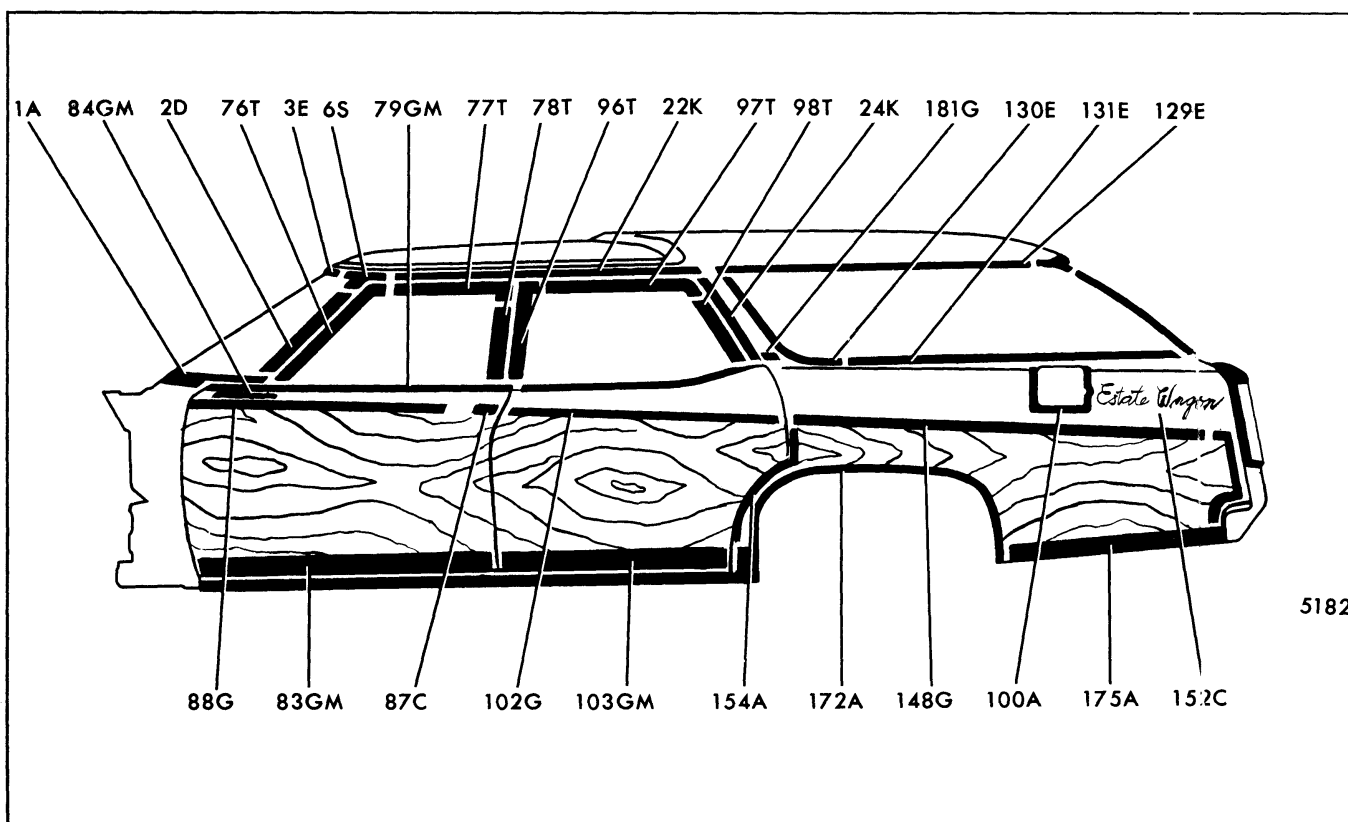


Fig. 11-94-Buick 4BR45 Styles (4BR35 Similar)

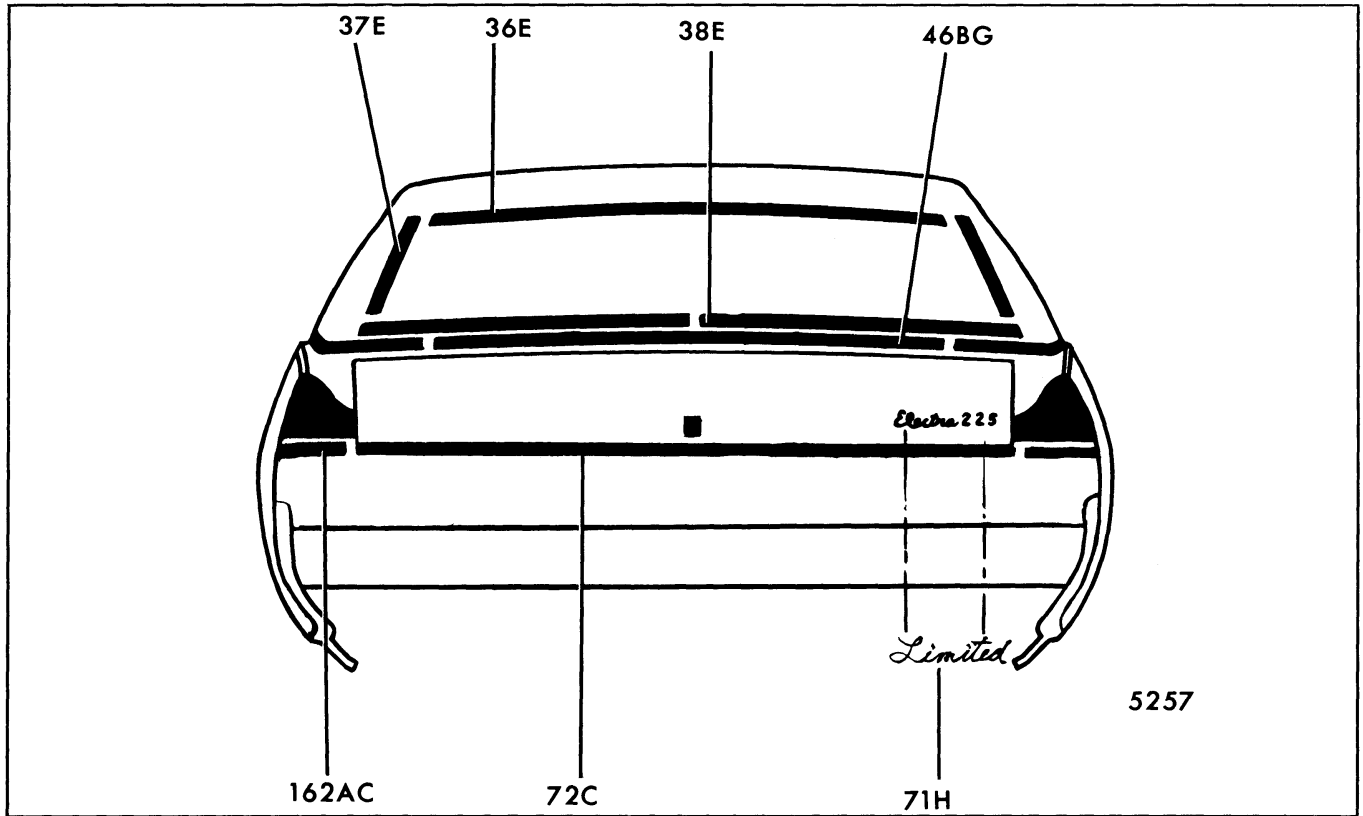


Fig. 11-95-Buick 4BL, 4BN, 4BP Styles

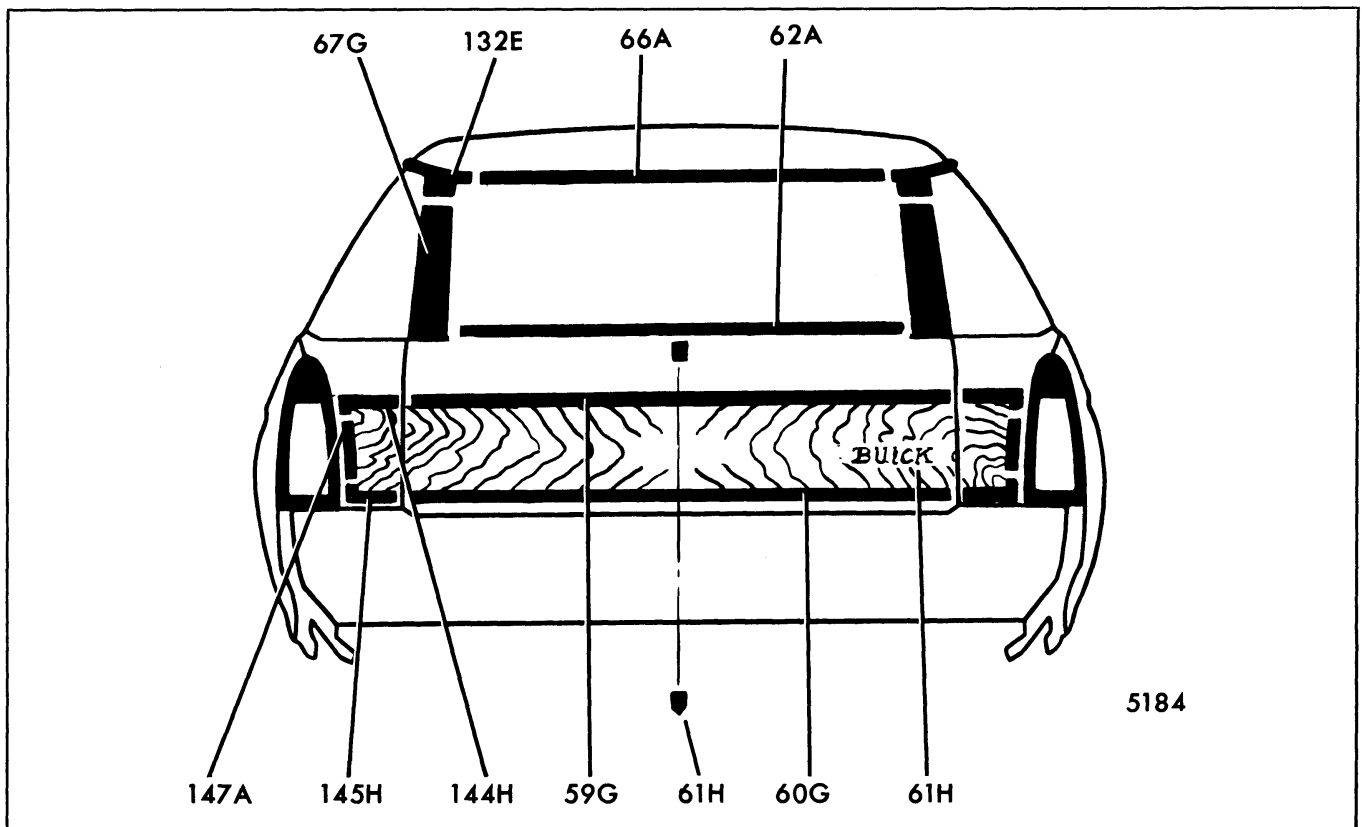


Fig. 11-96-Buick 4BR45 Styles (4BR35 Similar)

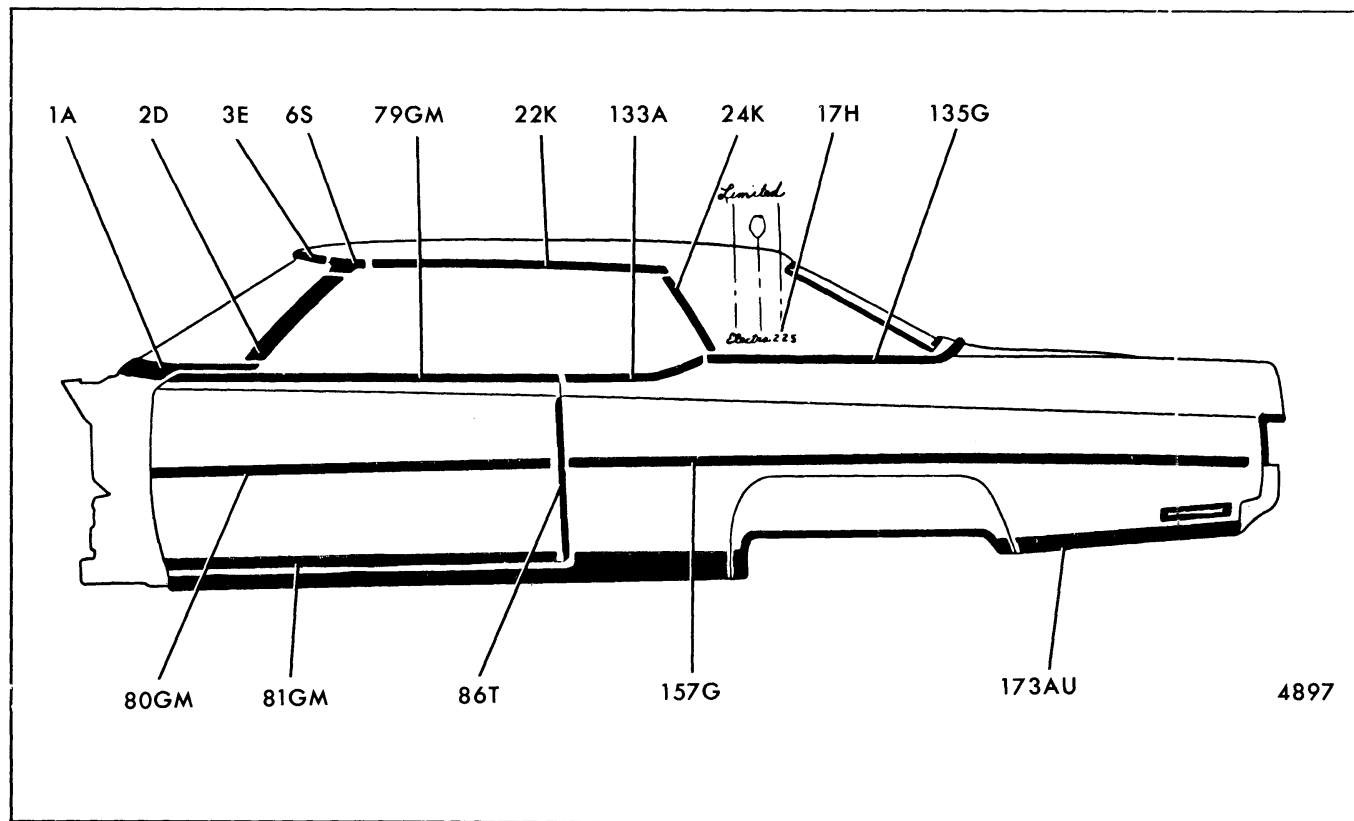


Fig. 11-97-Buick 4CV37 Styles (4CT37 Similar)

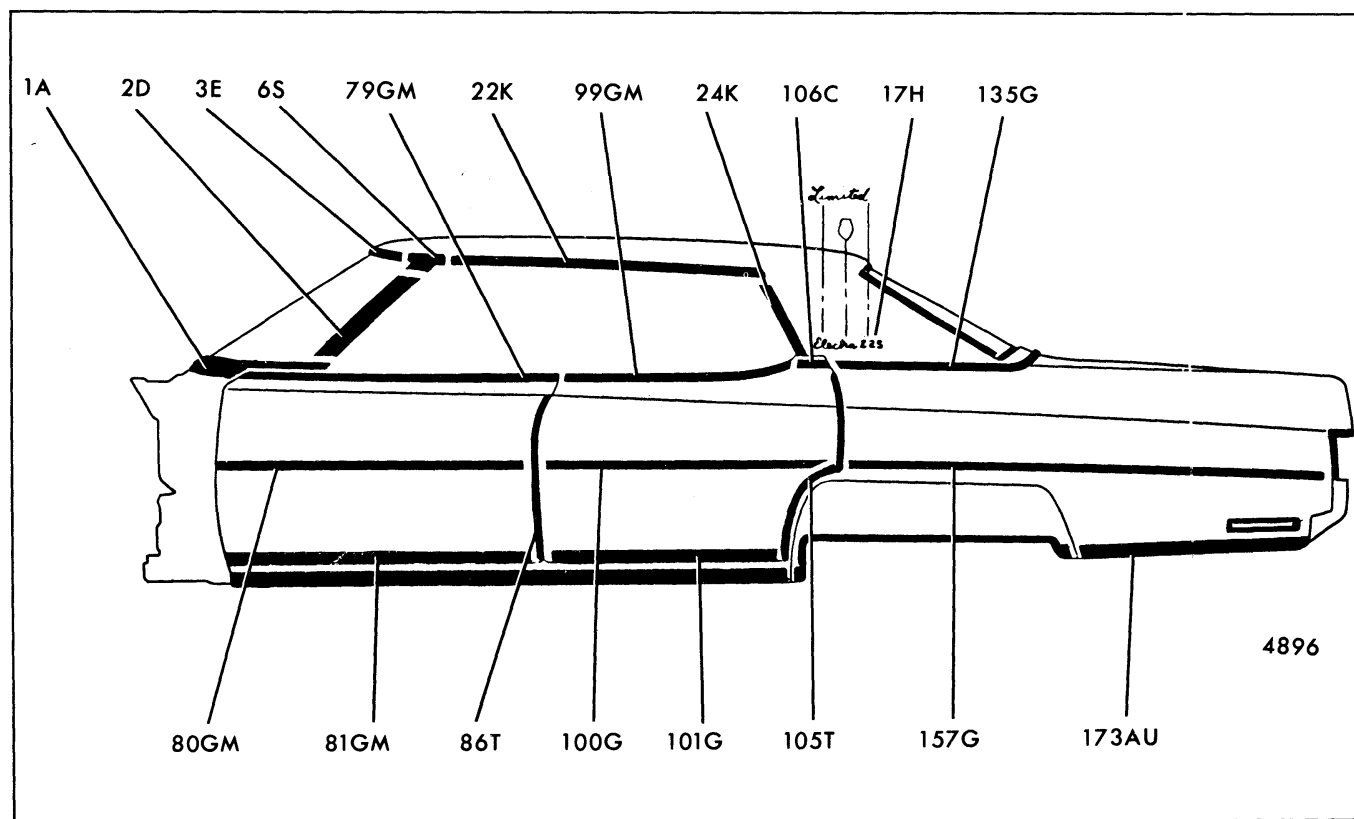


Fig. 11-98-Buick 4CV39 Styles (4CT39 Similar)



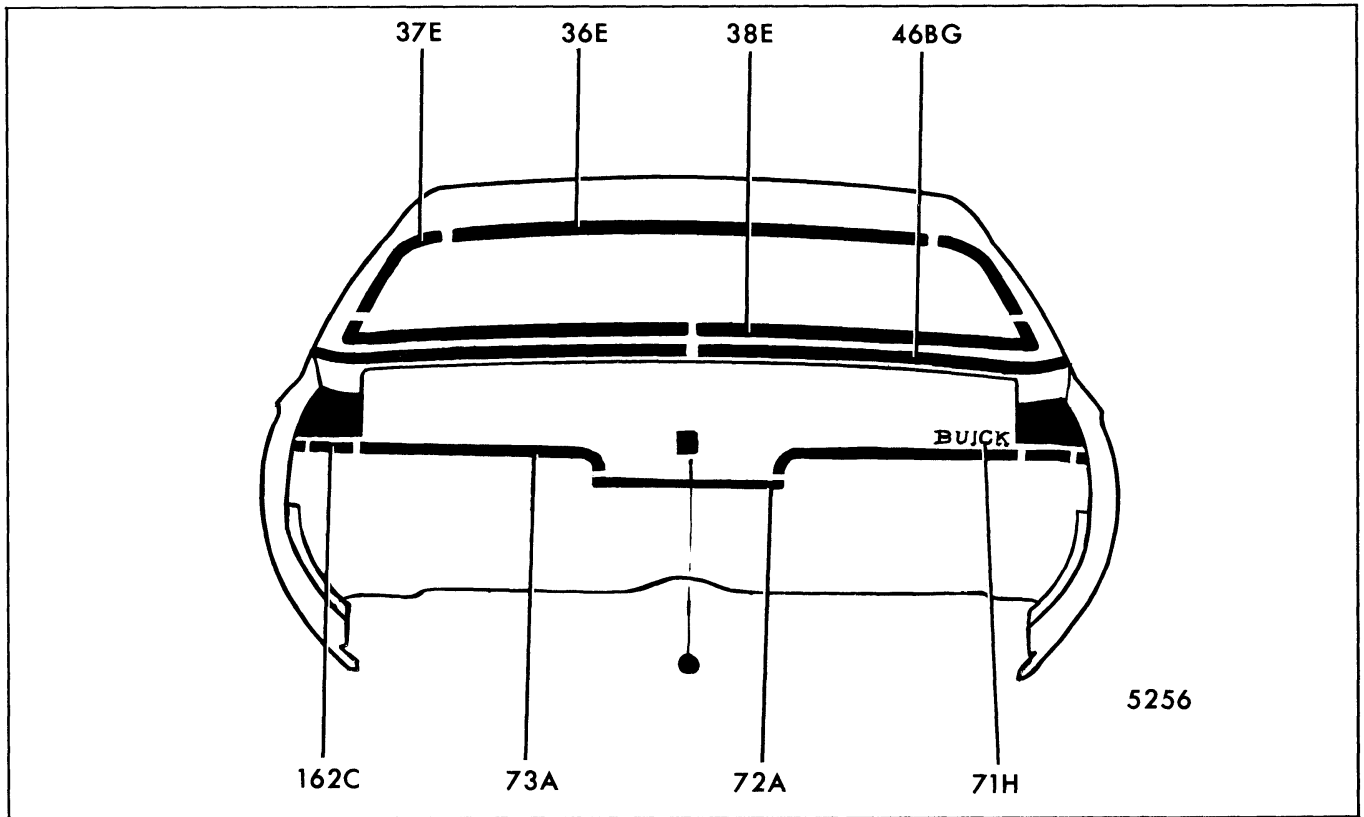


Fig. 11-99-Buick 4CV39 Styles (4CT39, 4CV, 4CT37 Similar)

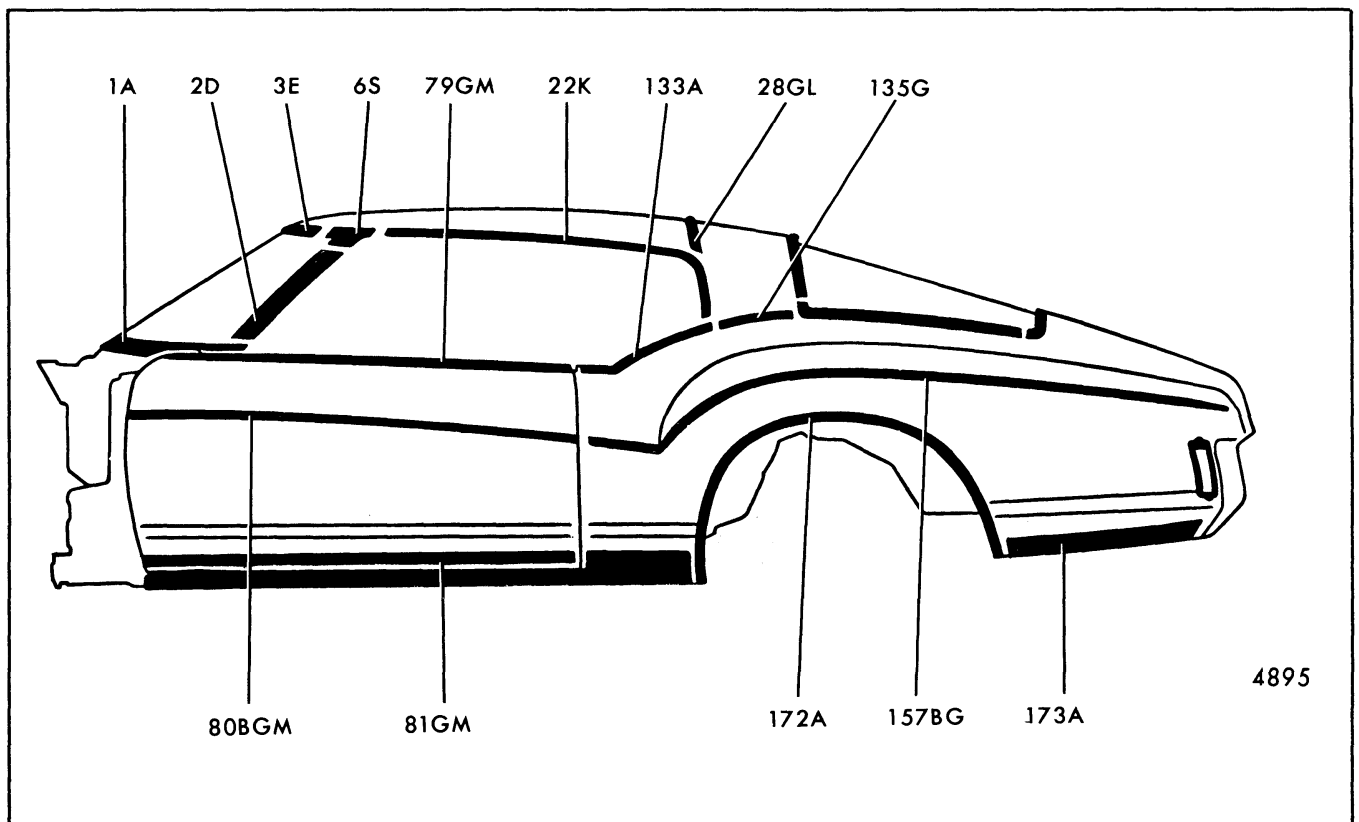


Fig. 11-100-Buick 4EY87 Styles

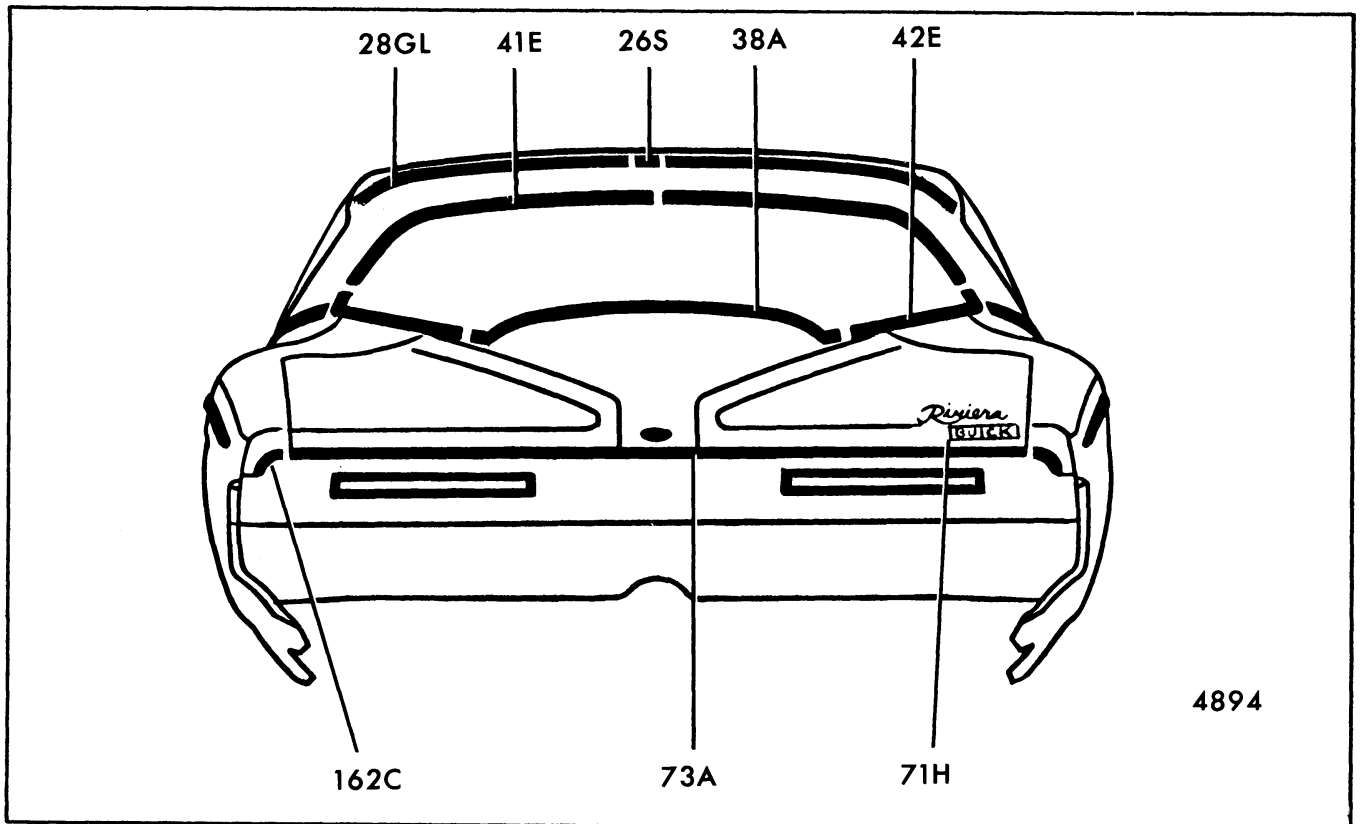


Fig. 11-101-Buick 4EY87 Styles

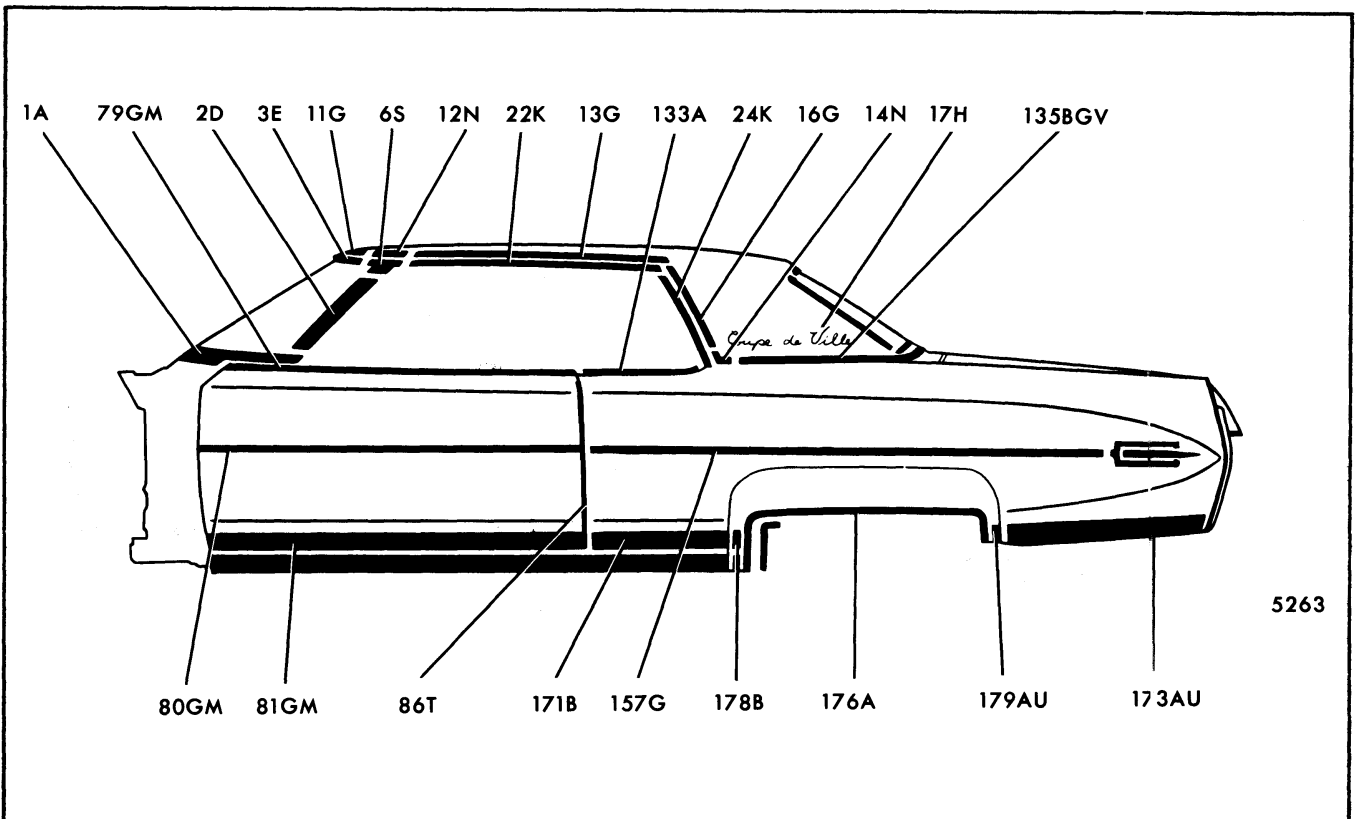


Fig. 11-102-Cadillac 6CD47 Styles (6CC47 Similar)

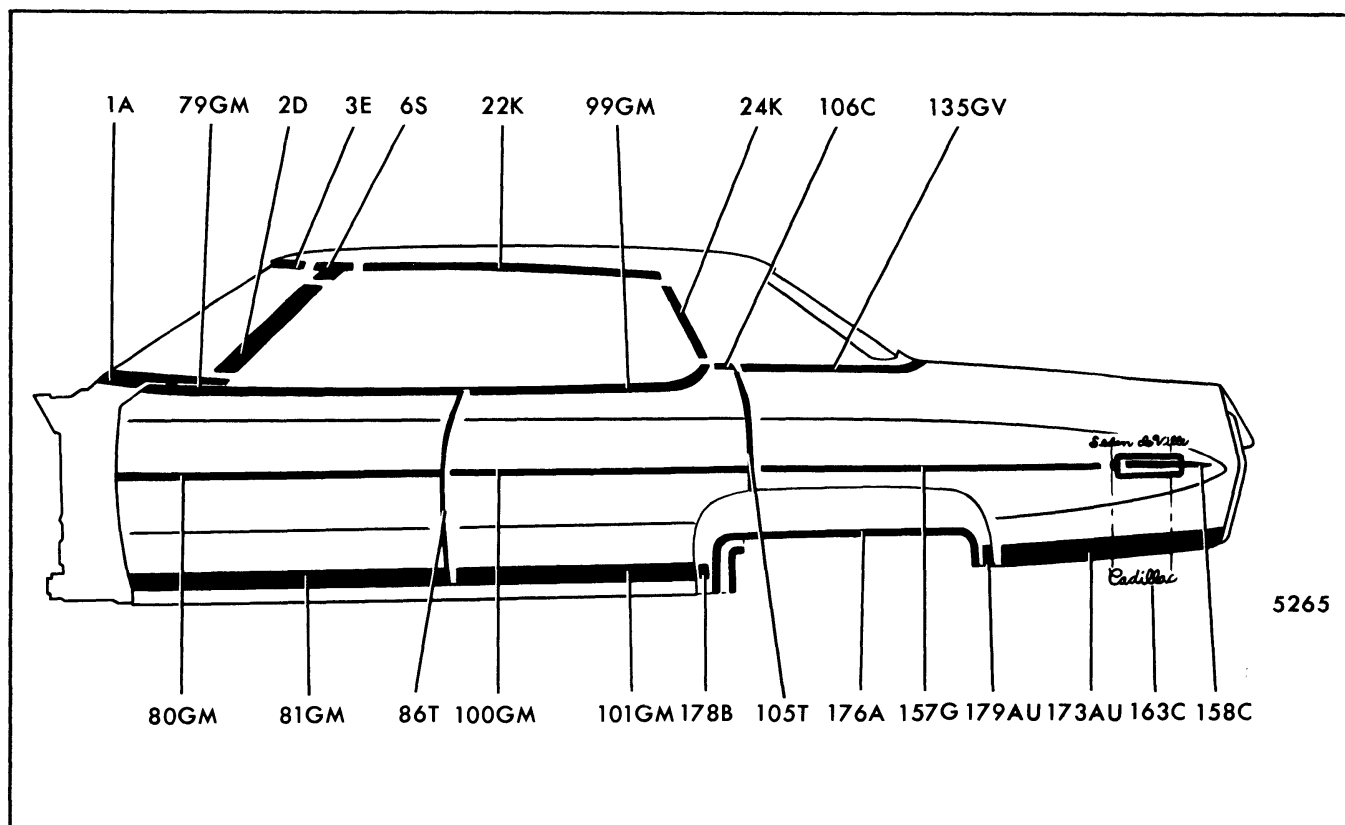


Fig. 11-103-Cadillac 6CD49 Styles (6CC49 Similar)

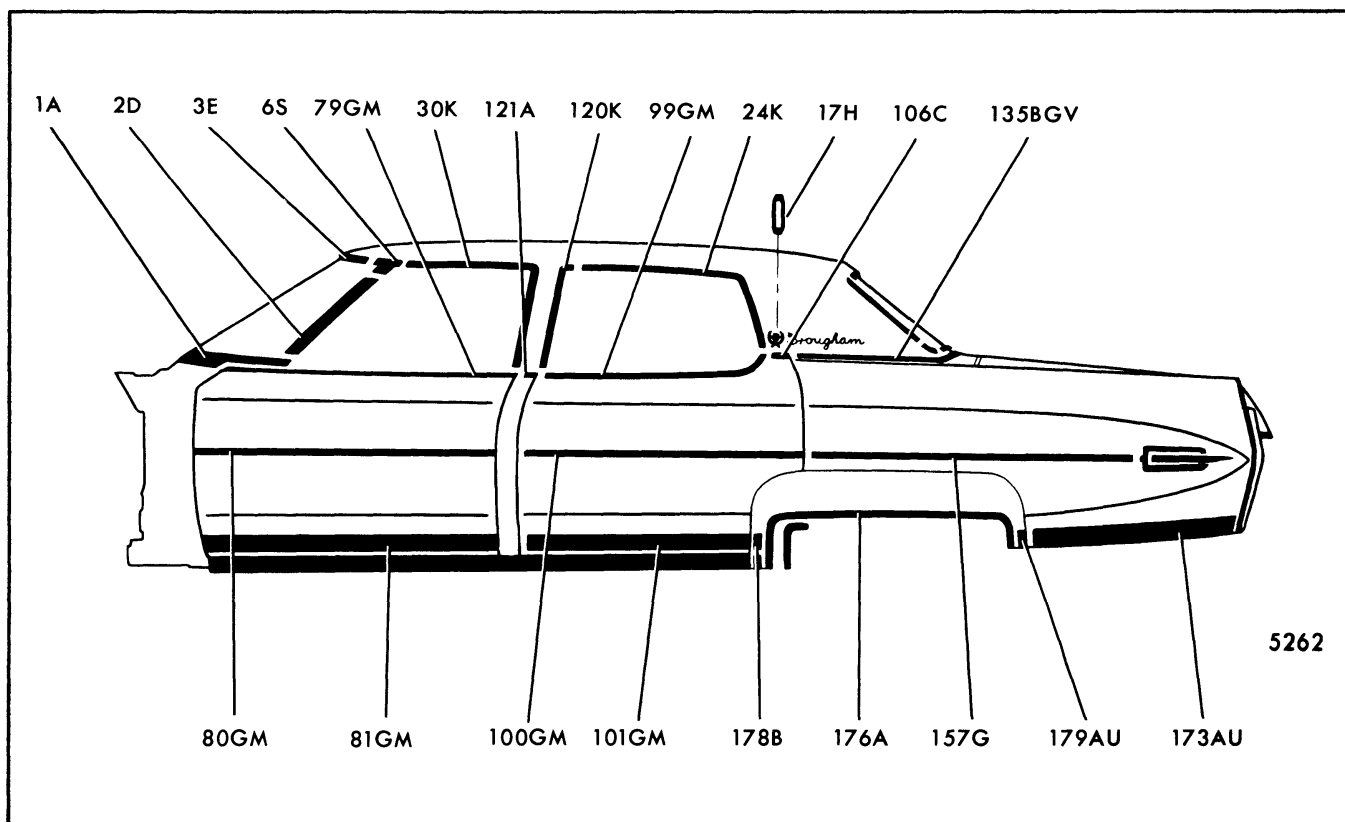


Fig. 11-104-Cadillac 6CB69 Styles

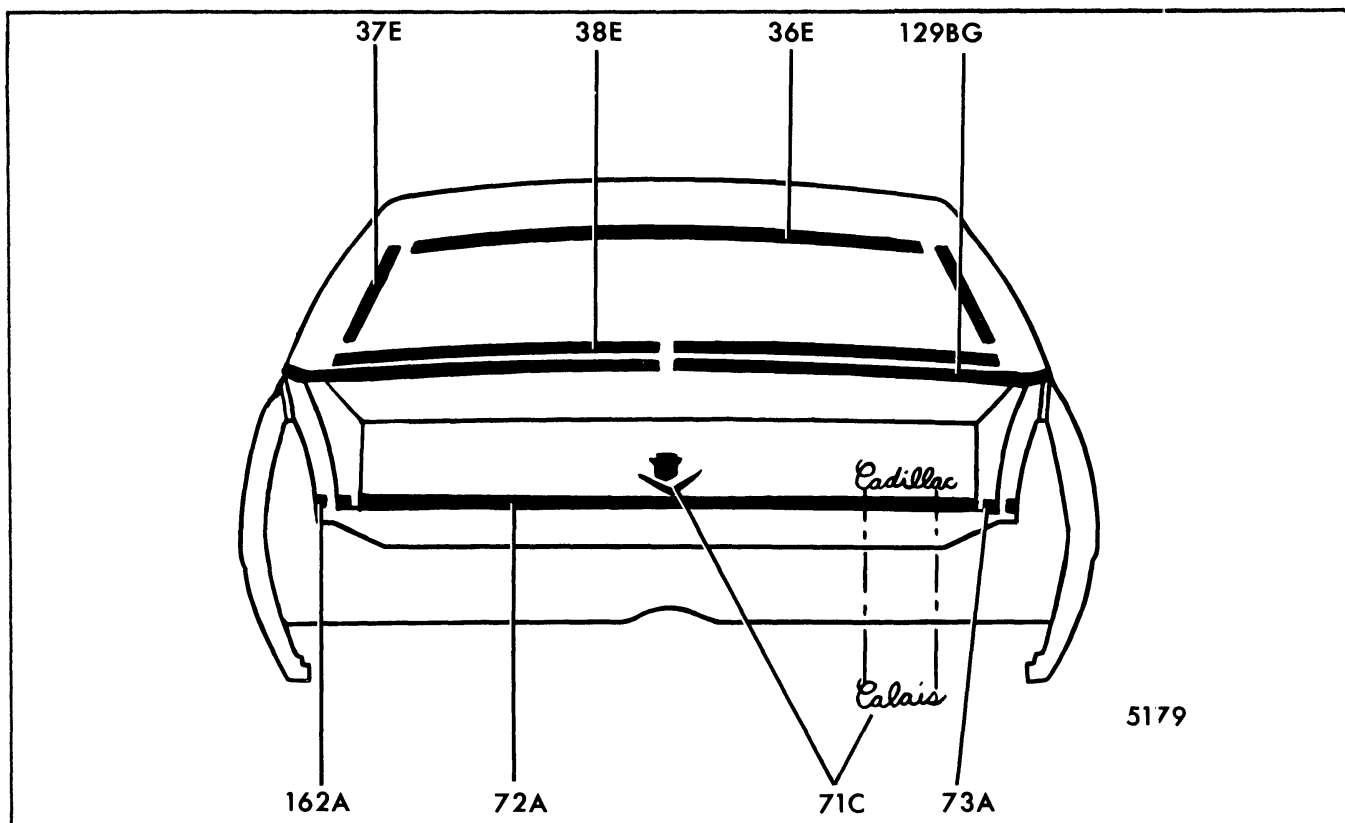


Fig. 11-105-Cadillac 6CD49 Styles (6CC49, 6CD, 6CC-47 Similar)

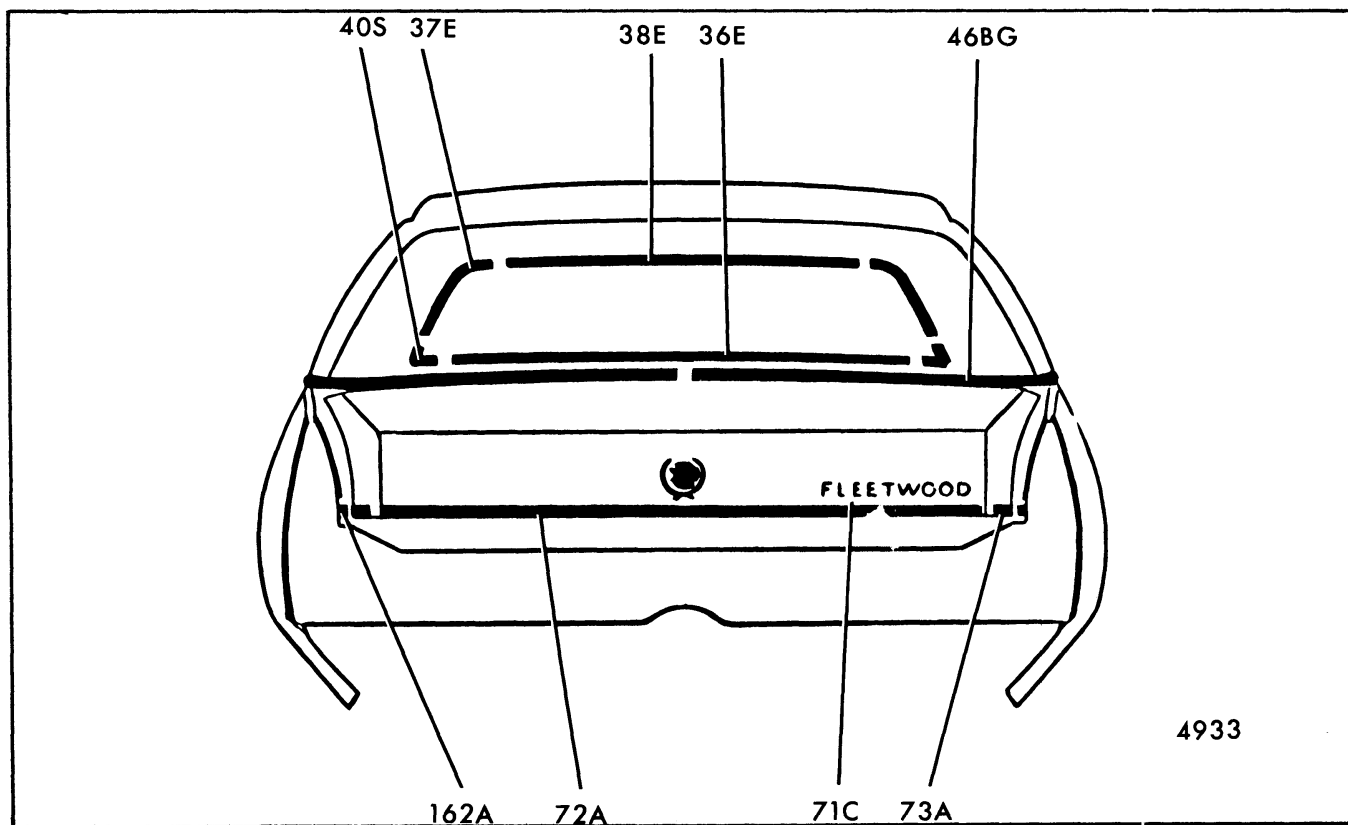


Fig. 11-106-Cadillac 6CB69 Styles (6DF23, 6DF33 Similar)

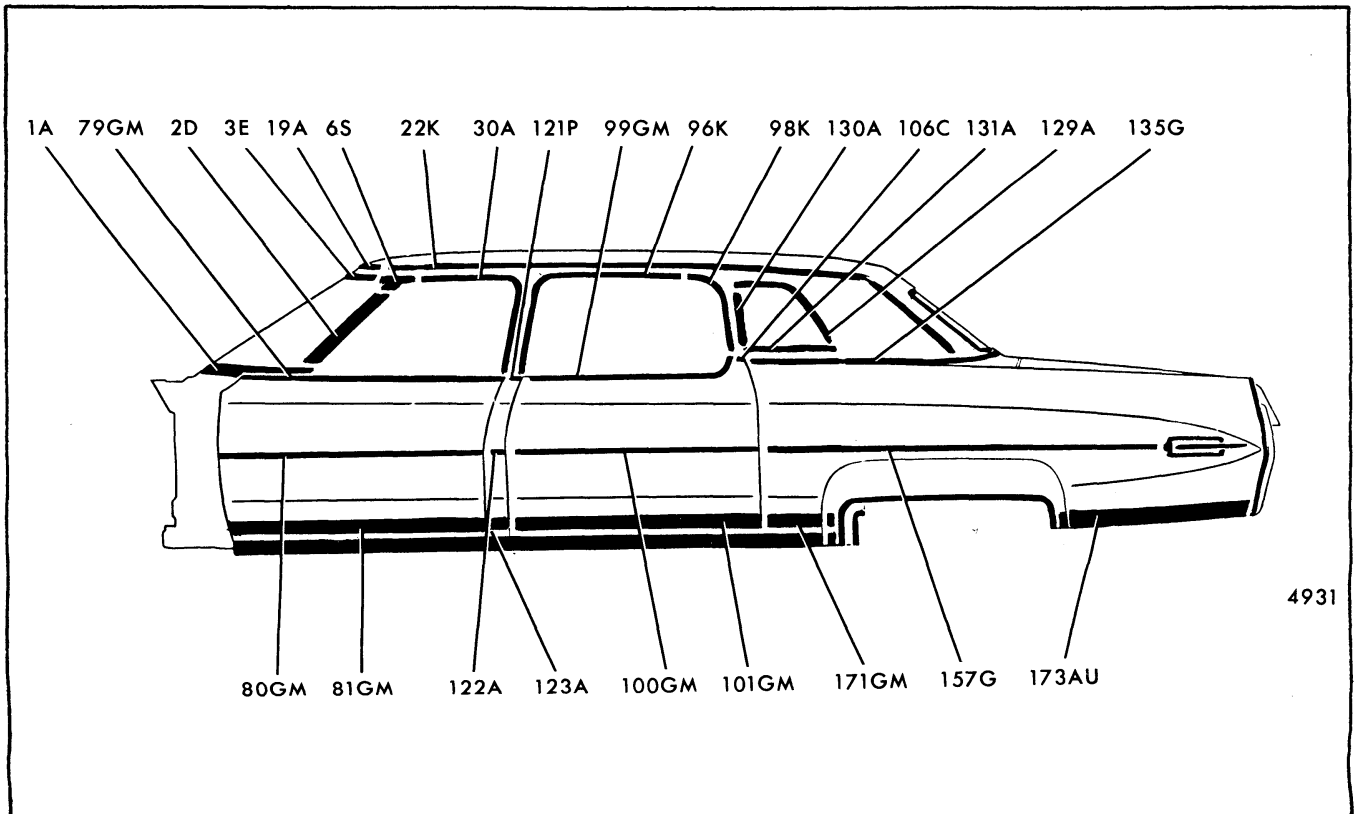


Fig. 11-107-Cadillac 6DF33 Styles (6DF23 Similar)

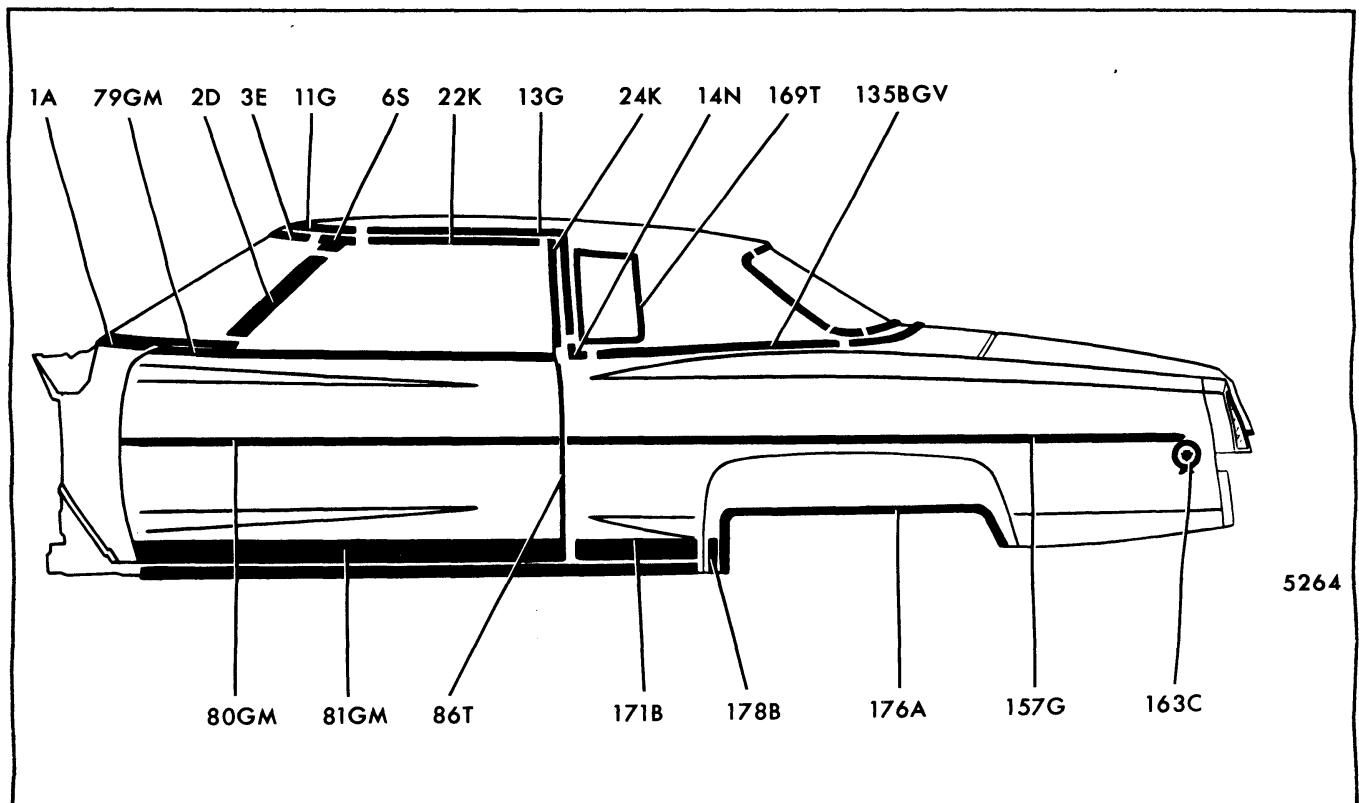


Fig. 11-108-Cadillac 6EL47 Styles (6EL67 Similar)

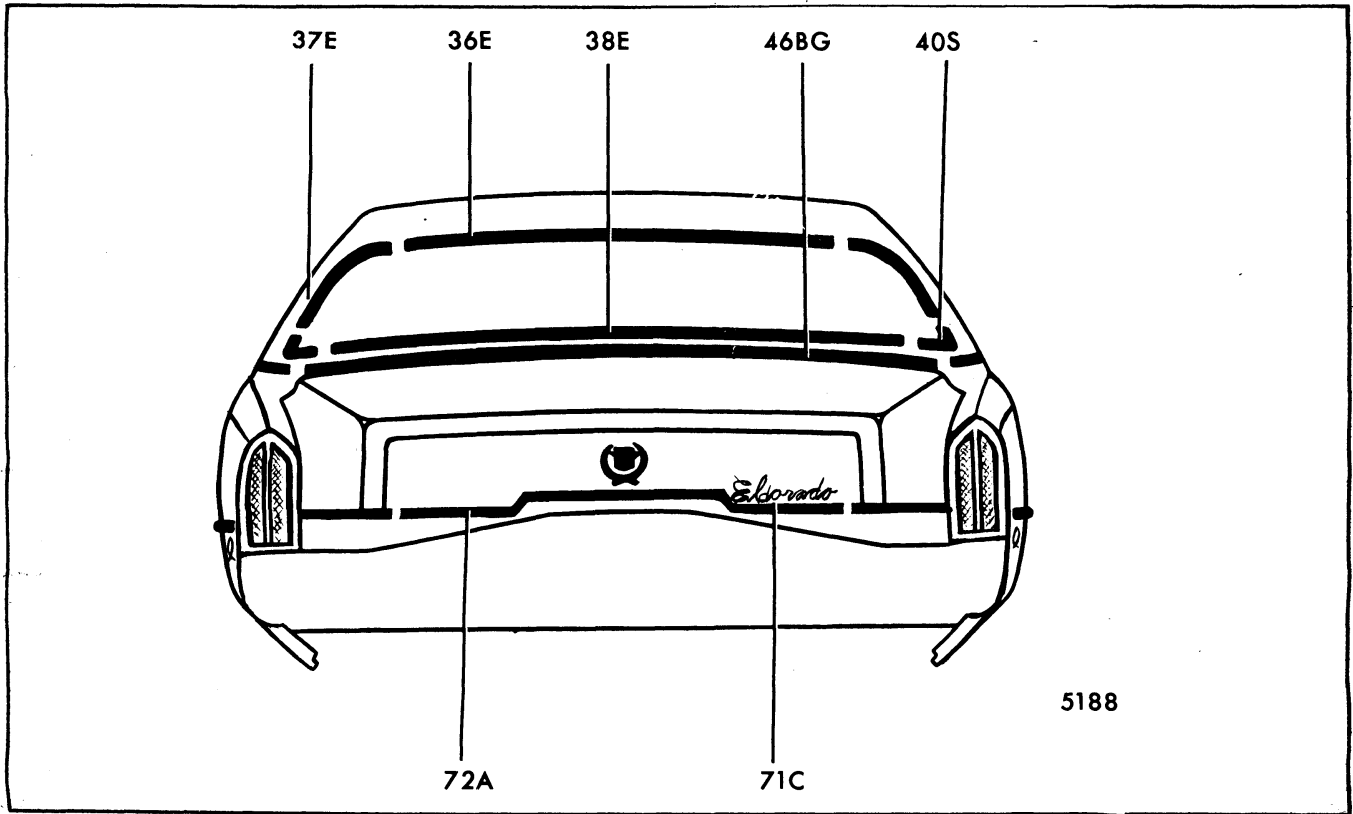


Fig. 11-109-Cadillac 6EL47 Styles (6EL67 Similar)

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